SOCIAL SCIENCES ✓

INDUSTRIAL MEDICINE

Industrial Health, Occupational Medicine and Traumatic Surgery

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Psychosomatic Consultations
— In Industry —

Compensable Hernia
— The Problems in the Average State —

Use and Abuse of Radiographs
— In the Diagnosis of Mouth Infection —

Industrial Dermatitis
— Experience with Paraprol —

Silica Hazards
— In Arc Furnace Construction —

Radioactive Tracers
— Their Use in Industrial Medicine —

Health Facilities
— In New Jersey Plants —

Industrial Hygiene Conference
— Report of IHF Tenth Annual Meeting —

Epilepsy
— In Relation to Job Placement —

"How I Got into Industrial Medicine"
— "And What I Think of It" —

Industrial Health Conference
— Industrial Physicians, Hygienists, Nurses, Dentists —
Tentative Program, April 8-13, 1946—

Volume 15 Number 1

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1. Solis-Cohen, S. and Githens, T. S.: Pharmacotherapeutics, ed. 1, New York, D. Appleton and Company, 1928, p 1375.
2. Tuft, L. and Levin, N. M.: Studies of the Expectorant Action of the Iodides, Am. J. M. Sc. **203**:717 (May) 1942.

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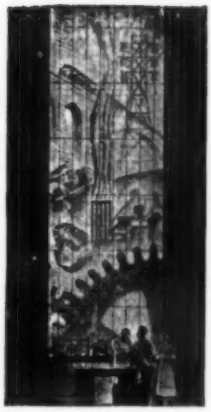

INDUSTRIAL HYGIENE
INDUSTRIAL MEDICINE
& RAILROAD SURGERY

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INDUSTRIAL Medicine in the Philippine Islands,
—by *Lieutenant Colonel Jean S. Felton.*

THE PRESENT WORK of the Industrial Health Research Board of Great Britain,
—by *Richard Schilling.*

A BRIEF Personality Appraisal Technique for Use in Interviewing,
—by *Leonard E. Himler, M.D.*

THE tentative program of the "Five-Group Conference of Industrial Health Experts" to be held, at Hotel Sherman in Chicago, April 8-13, 1946, appears on pages 39 and 40. Although at this time the program is labeled "tentative," it is rather because of its incompleteness in spots than because of possibilities of change that it is so called. The number and titles of the presentations, some of them in concurrent sessions on the same day, already indicate that the whole week will be one of unusually diversified and complete interest. And, too, there is an air over the whole assembly of "now it can be told"—some of the subjects being about matters and from situations more or less under the general ban during the war period. Among the papers of unusual timeliness and value will be that of MAJOR REYNOLDS and CAPTAIN STEBBINS, of Gardner General Army Hospital, on "Early Closure of Chronic Osteomyelitis with Split Thickness Skin Grafts"—on Thursday, April 11. This paper was given, with Kodachrome illustrations at the CENTRAL STATES SOCIETY meeting in December where DR. IRVIN'S "Psychosomatic Consultations in Industry" (page 1) was also given. Comments on both were unanimously to the effect that they were "the best in a long time." It is to be hoped that the attendance will, as the program does, more than compensate for the fact that 1945 was a "conventionless" year. Everyone should plan to attend; the indicated first move in that plan will be to write immediately to DR. E. C. HOLMBLAD, Housing Bureau, AAIP&S, Room 1300, 28 East Jackson Boulevard, Chicago 4, Illinois, for hotel accommodations as per the schedule on page 40. Do this now! Reservations will be much easier to cancel at the last minute than to obtain at the last minute! But it is hoped that nobody will find that he or she can't come!

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PERSONAL

ALLEN D. BRANDT, SC.D., formerly with the Safety and Security Division, Army Ordnance Department, Chicago, has been on duty since October 19, 1945, at the A. S. H. V. E. Research Laboratory, 10700 Euclid Avenue, Cleveland 6, Ohio.

DR. CORNELIUS F. HOLTON, Savannah, was appointed chief surgeon of the Central of Georgia Railway, as of September 1, 1945, succeeding DR. CRAIG BARROW, who died August 31.

DR. C. A. D'ALONZO has resumed his pre-war position as medical supervisor of the DuPont Experimental Station, Wilmington, Delaware.

KENNETH R. DOREMUS, recently discharged from the Navy with the rank of Lt. Commander, has returned to his duties as Industrial Hygiene Engineer in charge of the Philadelphia office of the Pennsylvania Bureau of Industrial Hygiene.

DR. MAX E. BLUE has accepted the position as full-time medical director at the Blue Grass Ordnance Depot which is situated in Richmond. The Depot is now owned and operated entirely by the U. S. Government. DR. BLUE was formerly a full-time health officer in Madison County. He resigned in 1943 because of poor health and has been in retirement until now.

—From *Kentucky M. J.*, November, 1945.

DR. LEWIS J. GRAHAM, Corning, New York, has been appointed medical director of Corning Glass Works, Corning, filling the vacancy left when DR. WILLIS C. TEMPLER died last May.

—From *J.A.M.A.*, 129:18, 1277, December 29, 1945.

DR. LEONARD A. KAGEN, has been assigned to the Illinois Department of Public Health, as Chief Industrial Hygiene Physician, Division of Industrial Hygiene. DR. MILTON H. KRONENBERG, former Chief of that Division, being now Assistant Medical Director, Caterpillar Tractor Company. DR. KAGEN joined the U.S.P.H.S. in July, 1941, and has since been assigned to the Baltimore City Health Department, the New Hampshire State Department of Health, and the New Jersey State Department of Health. The Illinois Division is now operating with a skeleton staff, but hopes to expand soon. A medical program for the prevention of occupational disease will be developed in which the medical as

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well as the engineering phase of industrial hygiene surveys will be stressed.

DR. HOWARD L. REED has been appointed assistant medical director of Hercules Powder Company, Wilmington, Delaware. DR. REED has been medical director of the Hercules-operated Sunflower Ordnance Works in Kansas for the past two years. Prior to that, he was medical director of the Hercules-operated Badger Ordnance Works in Wisconsin. A graduate of Duke University and Duke Medical School, he served as intern and resident physician at Roosevelt Hospital in New York City for nearly three years before joining Hercules in Wisconsin in March, 1942.

DR. DOUGLAS G. MAC PHERSON, formerly Director of the Los Angeles City Division of Industrial Hygiene, has been appointed Chief of the Los Angeles County Division of Industrial Hygiene. He succeeds DR. HUGH DIERKER, who has become Medical Director of General Motors' Southern California Division.

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International Conference

INCREASING interest of foreign nations in the industrial hygiene program, as conducted in the United States, was demonstrated in an informal conference held in Detroit, November 19 to 21, under the auspices of DR. C. D. SELBY, Medical Consultant to General Motors, and attended by representatives of the U. S. Public Health Service, the Canadian Department of National Health and Welfare, the British Medical Research Council, the American Medical Association, and others. The Canadian industrial hygiene system, modeled upon the pattern of Federal-state support and cooperation developed by the U. S. Public Health Service, was described by DR. F. S. PARNEY, Chief of the

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Canadian Bureau of Industrial Hygiene. The British system was explained by DR. DONALD HUNTER, a member of the Industrial Health Research Board of the British Medical Research Council. DR. R. S. F. SCHILLING, Secretary of the Board, was also present. DOCTORS SCHILLING and HUNTER are in this country at present, studying industrial hygiene methods, with a view to incorporating desirable features into the British program, which is in process of change. Representing the United States system were Medical Director J. G. TOWNSEND, Chief of the Industrial Hygiene Division, and Deputy Surgeon General WARREN F. DRAPER, delegated by Surgeon General Thomas Parran with responsibility for industrial health development in the Public Health Service. Other interested participants included DR. CARL M. PETERSON, Secretary of the Council on Industrial Health, American Medical Association; DR. RAY DAWSON, Assistant Secretary of the A. M. A. Council; DR. WILLIAM A. SAWYER, a Council member; DR. RAYMOND HUSSEY, Dean of the School of Occupational Health, Wayne University Medical Science Center; and DR. C. D. SELBY, Medical Consultant of General Motors Corporation. This was the first time representatives of the three nations had come together for a pooling of information and meeting of minds on industrial health matters. Plans for expansion of American industrial hygiene activities, as described by DR. DRAPER and DR. TOWNSEND, were received with enthusiasm.

—*Industrial Hygiene News Letter*, 5:12, 3, December, 1945.

Cooperation in Chest X-Rays

LED by company and union officials, the employees of Pequanoc Rubber Company have had chest x-rays taken at the plant as part of their health program. Pequanoc executive heard THOMAS J. MAGEE, health education secretary, Passaic County Tuberculosis and Health Association, speak at Butler Rotary three weeks ago on the association's promotion of chest x-rays in Passaic county industries and immediately took steps to offer this health safeguard, which aims to prevent tuberculosis or discover it early when it is most readily curable, to their workers. The x-rays are paid for by the company and participation

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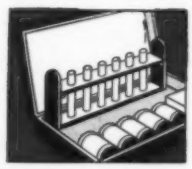

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—From *Bloomingdale New Jersey, Argus*, December 20, 1945.

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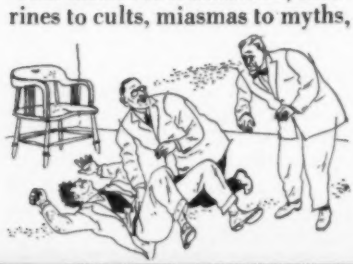

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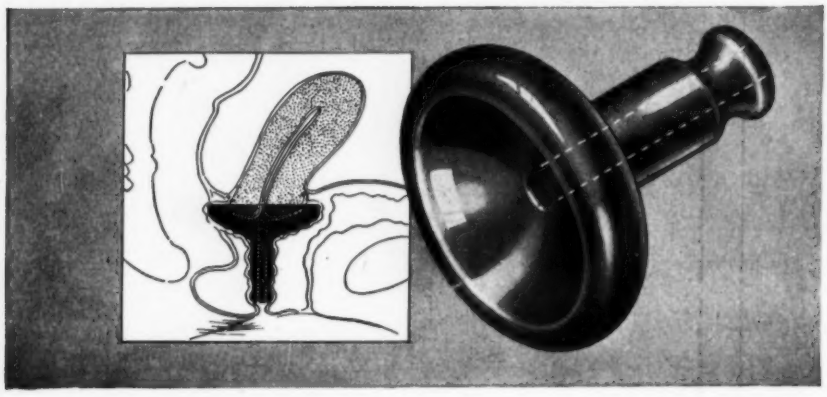

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the American Medical Association, and other professional groups. Physicians wishing to enter industrial medicine or to change their connections within industry, and industries interested in obtaining the services of physicians may communicate with the Council on Industrial Health of the American Medical Association, or the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS. Engineers, chemists, toxicologists, and other hygienists should get in touch with DR. ALLEN D. BRANDT, Secretary of the AMERICAN INDUSTRIAL HYGIENE ASSOCIATION, who may be addressed at the Research Laboratories, American Society of Heating and Ventilating Engineers, 10700 Euclid Avenue, Cleveland 6, Ohio. Placement of governmental industrial hygiene personnel, in local and state official industrial hygiene agencies, is being handled by J. J. BLOOMFIELD, Secretary-Treasurer of the NATIONAL CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS, who may be addressed at the Industrial Hygiene Division, U. S. Public Health Service. Industrial dentists, and companies wishing their services, may receive placement information through the AMERICAN ASSOCIATION OF INDUSTRIAL DENTISTS. Its Secretary-Treasurer, DR. LYMAN D. HEACOCK, may be reached at the Industrial Hygiene Division, U. S. Public Health Service. A counseling and placement service for industrial nurses has been established by the American Nurses' Association, with its headquarters at 1790 Broadway, New York 19, New York, and a branch office at 8 South Michigan Avenue, Chicago, Illinois. Rosters will not be confined to members of the AMERICAN INDUSTRIAL HYGIENE ASSOCIATION and the other professional groups, but will be open to persons interested in entering the various fields of industrial health activity. Advice on essential qualifications, training opportunities, and openings in all parts of the nation will be given. The Health Advisory Council of the U. S. Chamber of Commerce is greatly interested in the new service and will bring it to the attention of industrial management in all areas through its local and state member Chambers of Commerce. A directory of all industrial health placement bureaus will be compiled by the Chamber of Commerce, and be made available to all interested persons and organizations. The Health Advisory Council has sent a questionnaire, designed to obtain information from which the directory can be prepared, to every professional group concerned with industrial health, to schools of public health, and to all state and city industrial hygiene divisions.

—From *Industrial Hygiene News Letter*, 5:12, 2-3, December, 1945.

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—Illinois State Medical Society Release.

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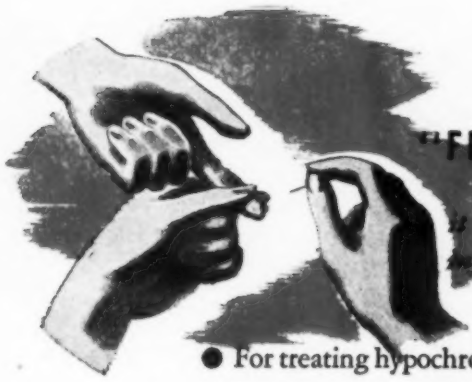
WINNING a full victory in her battle against "intolerable" sanitary conditions in this little mining town, DR. ELIZABETH O. HAYES was back at work today as company physician. Young, attractive "Dr. Betty" resigned early last summer, protesting against filthy streets and reportedly contaminated drinking water in the company-owned town, and thus sparked a five-month-long strike by 375 miners. Today the Shawmut Mining Company had its bulldozers hard at work cleaning up the streets. And, according to miners' attorney, Ross Pentz, the town wells —the only source of drinking water— have been cleaned. The firm's new receivers, yielding still another miners' demand, reappointed Dr. Betty and moved her equipment back into the small, company-owned physician's office, Pentz said. He added that, after a meeting with the new receivers yesterday, the company's strike committee had voted to recommend an end to the strike. Pentz predicted that the miners would be back at work next Monday. "The miners and the new receivers seem to like each other," he said.

—From *New York Post*, December 7, 1945.



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†J. Clin. Investigation 16:547, 1937.

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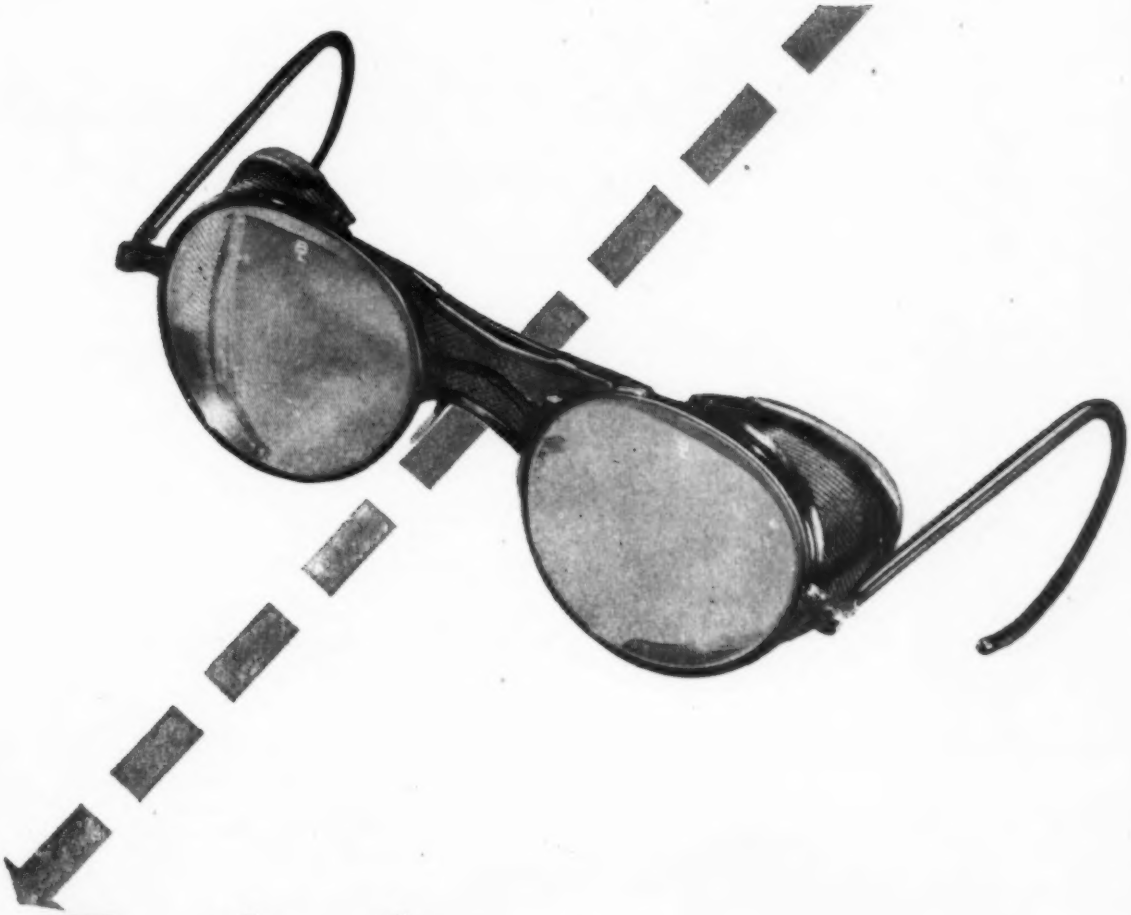

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— ARNETT, J. H.,
Am. J. of the Medical Sciences
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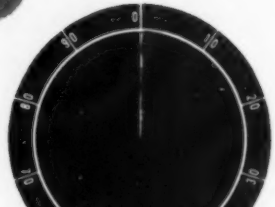

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1. Tsuchiya, H. M. et al.: Proc. Soc. Exp. Biol. and Med., *50*:262, 1942.
2. Strakosch, E. A. and Clark, W. G.: Minn. Med. *26*:276, 1943. Brown, C. et al.: Am. J. Surg., to be published.

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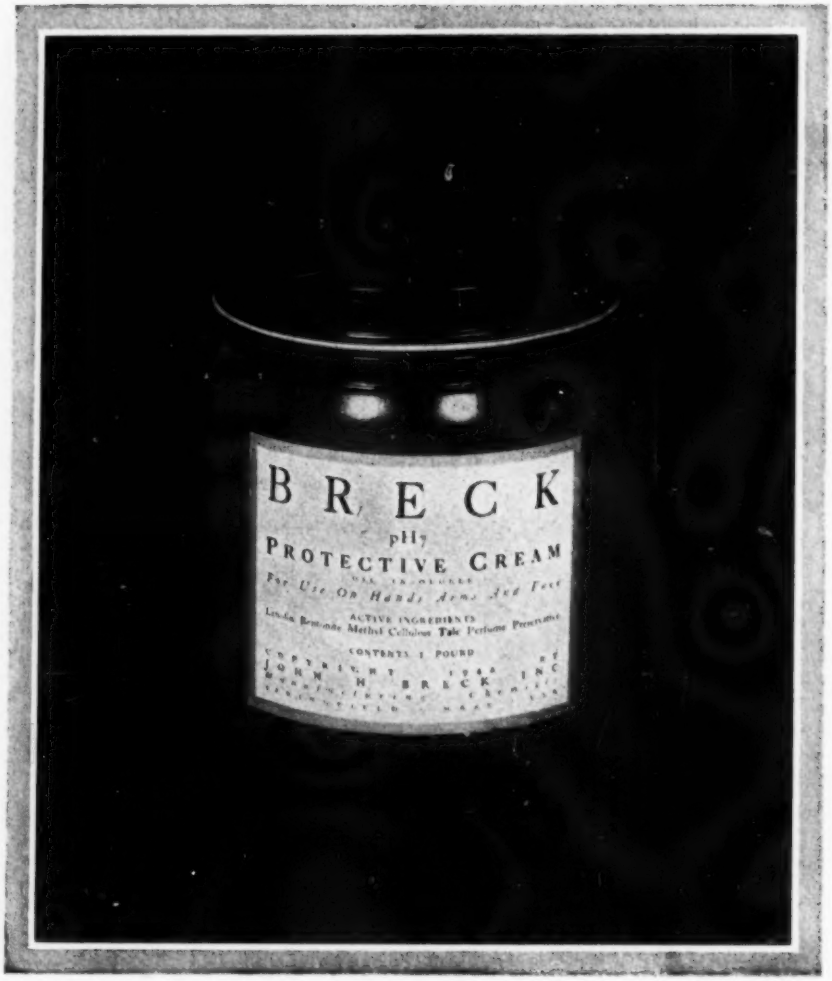

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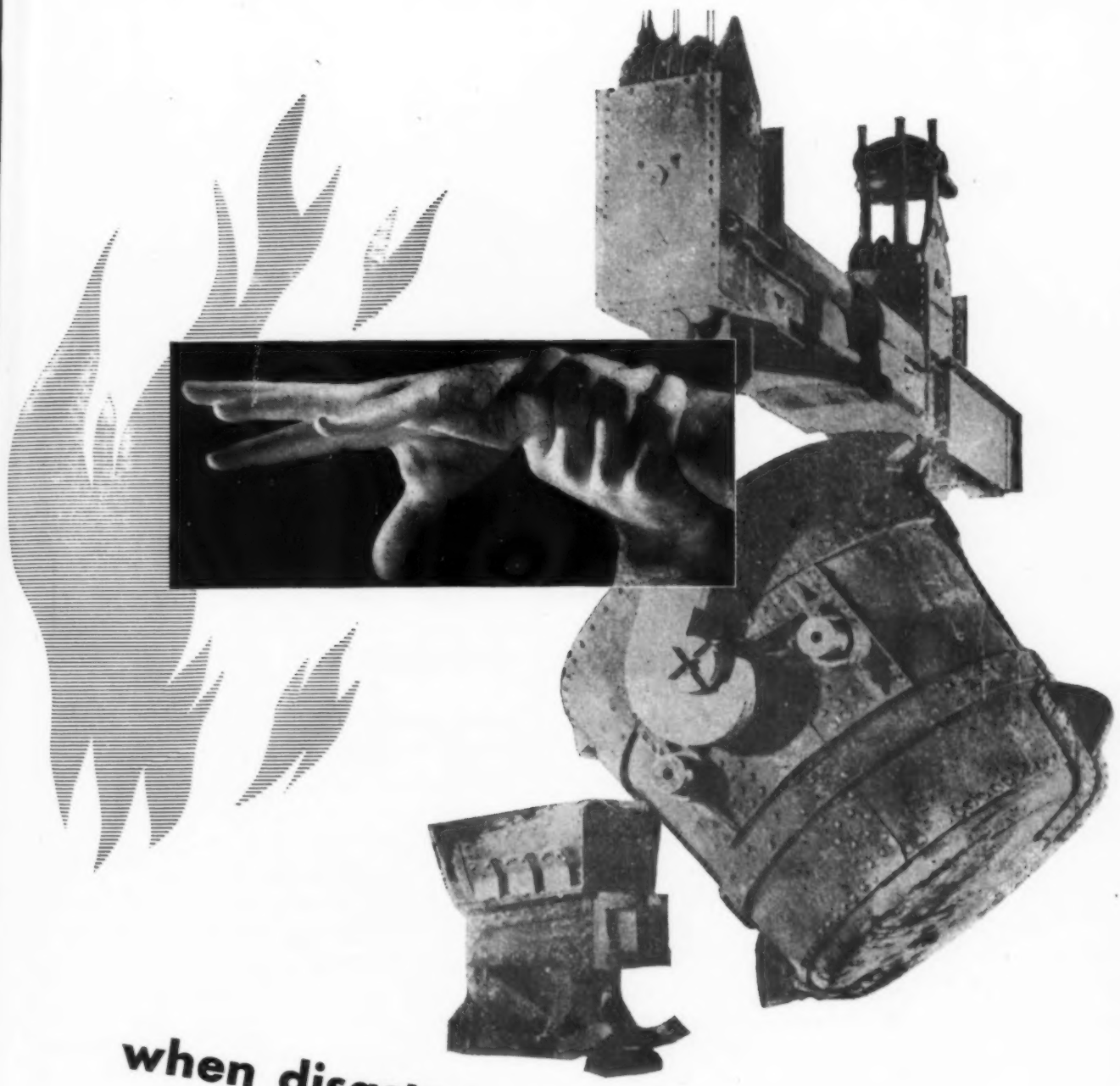

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1. J. A. M. A., *128*:475-479, June 16, 1945.

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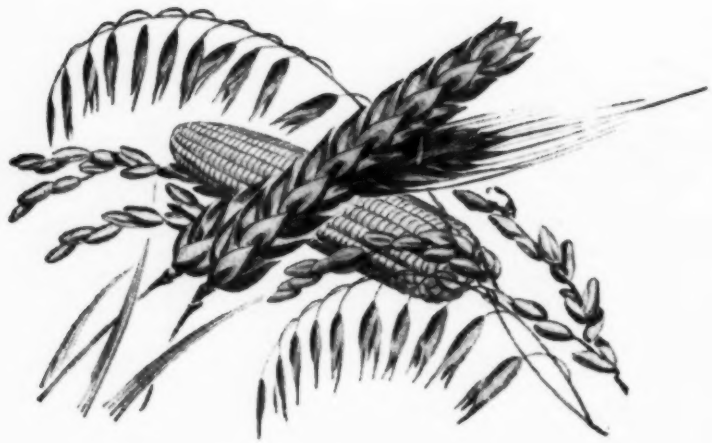

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Combisul - TD

(equal parts of sulfa*thiazole* and sulfa*diaz'ne*)

in one tablet

TO REDUCE RENAL TOXICITY INCIDENT TO SULFONAMIDE THERAPY

Recent experimental and clinical studies[1,2] prove that administration of sulfathiazole and sulfadiazine in combination in equal parts reduces renal complications such as crystalluria, hematuria and urinary tract blockage, and is much safer than either drug used alone in whole dosage. Simultaneously, antibacterial activity and therapeutic efficacy are maintained.

COMBISUL-TD presents 0.25 gram sulfathiazole and 0.25 gram sulfadiazine — a total of 0.5 gram per tablet. No signs of renal toxicity have been encountered by use of this mixture and even crystalluria is infrequent. The indications for, and dosage of, COMBISUL-TD are the same as for either drug administered alone. Meningitis is an exception, for which COMBISUL-DM, a combination of 0.25 gram sulfadiazine and 0.25 gram sulfamerazine is available.

COMBISUL-TD available in 0.5 gram tablets. Bottles of 100 and 1000.
COMBISUL-DM available in 0.5 gram tablets. Bottles of 100 and 1000.

1. Lehr, D.: Proc. Soc. Exper. Biol. & Med. *58*:11, 1945.
2. Lehr, D.: In press.

Trade-Marks COMBISUL-TD and COMBISUL-DM — Reg. U. S. Pat. Off.

SCHERING

Schering CORPORATION • BLOOMFIELD, N. J.
IN CANADA, SCHERING CORPORATION LIMITED, MONTREAL

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IN CONVENIENCE... SECURITY... MONEY SAVED... from the day it enables your hospital to prepare, store and administer SAFE PARENTERAL FLUIDS at an amazingly low per-liter cost.

Within a relatively short period, the Fenwal Technic has been adopted by hundreds of conservative yet alert-to-trend hospitals who recognize in this standardized equipment an immediate means of effecting a drastic economy.

PROVIDES FOR ADMINISTRATION FROM ORIGINAL CONTAINERS

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- Reusable TEL-O-SEAL and POUR-O-VAC hermetic closures may be used interchangeably with Fenwal Containers.

Send for literature describing various capacity Preparation Units and supplementary equipment which insures safety . . . accuracy . . . speed.

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THE SOLUTION DESIRED AT THE INSTANT REQUIRED

Case X—Massachusetts General Hospital Patient—Victim of Cocoanut Grove Fire.

NO. 1—Second degree burns of face and ears and third degree scalp burn covered by primary occlusive dressing on night of admission. Patient had a total burn surface of 12.5 per cent.

NO. 2—As first head dressing was changed on seventh day, remnants of destroyed skin and dry serum are still present and uninfected.

NO. 3—Final view of the face on the 55th day showing absence of scarring, and normal contours. The scalp healed without grafting.

PETROLATUM in the Surface Treatment of BURNS

'VASELINE' PETROLEUM JELLY
is the world's leading brand of
PETROLATUM U.S.P.

IN describing treatment of surface wounds of burn casualties following Boston's Cocoanut Grove fire, this simple technique was reported as "eminently satisfactory":*

1. No debridement of burn surface.
2. No cleansing of the burn surface.
3. Bland ointment with protective dressing (". . . boric acid in petrolatum is safe").*
4. Chemotherapy administered internally.

This treatment, given extensive use following the disaster* has the advantage of simplicity. There is less manipulation of the patient, important in consideration of shock. There is quicker relief of pain, with less rolling as necessitated in debridement and cleansing. Earlier relief of pain, too, by prompt covering.

Since infection originates almost entirely from surface contamination following the burn injury, it is pointed out that the earlier the wound can be covered, the less the infection. Thus this simple, early covering method becomes a measure against infection.

In treatment of burn surfaces the physician will find 'Vaseline' Petroleum Jelly—plain or borated—is prompt and effective.

*Ann. of Surg. 117:885 (June) 1943.

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MADE ONLY BY CHESEBROUGH MANUFACTURING CO., CONS'D, NEW YORK, N. Y.

Safety . . . a vital consideration in postwar planning

Youngsters, upon entering this modern classroom are now protected by the germ-killing ultraviolet potency of

HYGEAIRE UNITS

BEAR IN MIND that the health-conserving benefits of air sanitation are equally important right

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Insures the Rapid Destruction of Air-Borne Bacteria and Viruses

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Their lethal efficiency in the zone of irradiation is effective at distances as great as 35 feet from the Unit . . . a comparative figure that suggests unprecedented economy in the number of Units required and low-cost operation.

Because of their small size and low visible light output, Hygeaire Units offer virtually no distractive influence.

Room occupants are constantly protected against direct exposure to the projected beam by means of a fixed baffle which confines the rays to an area above the line of vision.

Here is AIR SANITATION, at an operational cost averaging less than 3¢ a day per 1000 cubic feet of room volume.

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● ● ● in fact, wherever people work or congregate within confined areas.

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AMERICAN STERILIZER COMPANY

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DESIGNERS AND MANUFACTURERS OF SURGICAL STERILIZERS, TABLES AND LIGHTS

BETTER PSYCHOLOGICAL MANAGEMENT OF CATAMENIA

While a woman (during her menses) may reluctantly accept the sense of depression, nervous tension, and increased irritability towards her surroundings as inevitable, she will still be grateful for any suggestion that may ease her burden.

By recommending TAMPAX you can help your patient's emotional attitude towards menstruation by pointing out that (differing from pads) TAMPAX provides

. . . complete INTERNAL protection
. . . freedom from perineal irritation
. . . prevention of objectionable odor

You can assure your patients that many women scarcely notice the presence of TAMPAX—it is so comfortable to wear.

To meet the varying requirements of the individual, TAMPAX is available in "Super", "Regular", and "Junior" absorbencies. The coupon below is for your convenience.

TAMPAX

FOR BETTER PROTECTIVE MANAGEMENT

ACCEPTED FOR ADVERTISING BY THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

TAMPAX INCORPORATED
PALMER, MASSACHUSETTS

Please send me a professional supply of the three absorbencies of Tampax together with literature.

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PAIN IN HERPES ZOSTER

In herpes zoster, "pain is likely to be troublesome in direct proportion to the age of the patient. In the youth it is seldom a problem; in the aged it may persist for months."*

*Simons, D. J., and Wolff, H. G.: (Management of Chronic Diseases of the Nervous System): M. Clin. N. Am. p. 434, March, 1944.

'TABLOID'

'Empirin' COMPOUND

In bottles of 100 and 500 • *Each product contains—Acetophenetidin gr. 2½ • Caffeine gr. ⅛ • Acetylsalicylic Acid gr. 3½ • Also 'Tabloid' 'Empirin' Compound with Codeine Phosphate • 'Tabloid' and 'Empirin' are Registered Trademarks*

BURROUGHS WELLCOME & CO. (U. S. A.) 9 & 11 EAST 41st ST., NEW YORK 17

your plant Benzol hazards—

Extreme Sensitivity

IN DETECTION AND ACCURATE INDICATION

Top view of the instrument, with hinged cover removed. Fifty graduations on meter scale enable concentrations to be read directly to within 20 p.p.m.

The M·S·A Benzol INDICATOR

- LIGHTWEIGHT
- PORTABLE
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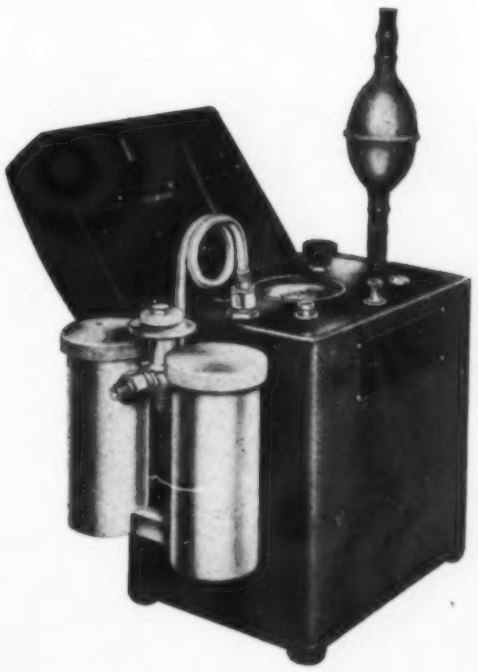
Specially designed for investigations of Benzol concentrations which might be dangerous to the health of workers, this modified combustible gas indicator accurately determines Benzol hazards where these exist at the working places, with a wide field of use in chemical, by-product coke, paint, varnish, and rubber plants—and, in fact, everywhere that Benzol is encountered as a menace to health and safety. The M.S.A. Benzol Indicator is readily portable, and has a range of from 0 to 1000 parts of Benzol per million parts of air. The instrument is equipped with a dessicator tube for removal of water vapor from sampled air, and a Benzol scrubber which provides a means of balancing the electrical circuit in presence of Benzol vapors (each with replaceable cartridge); the Indicator enables determination easily and quickly on the job. For the descriptive facts, send for our detailed Bulletin DM-3.



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To our organization members, whose skills and devotion to a tradition have helped to maintain Kny-Scheerer instrument standards of quality, workmanship and service through 50 years of peace and wartime service, we express our humble gratitude—and the deserved acknowledgment of the surgical profession.

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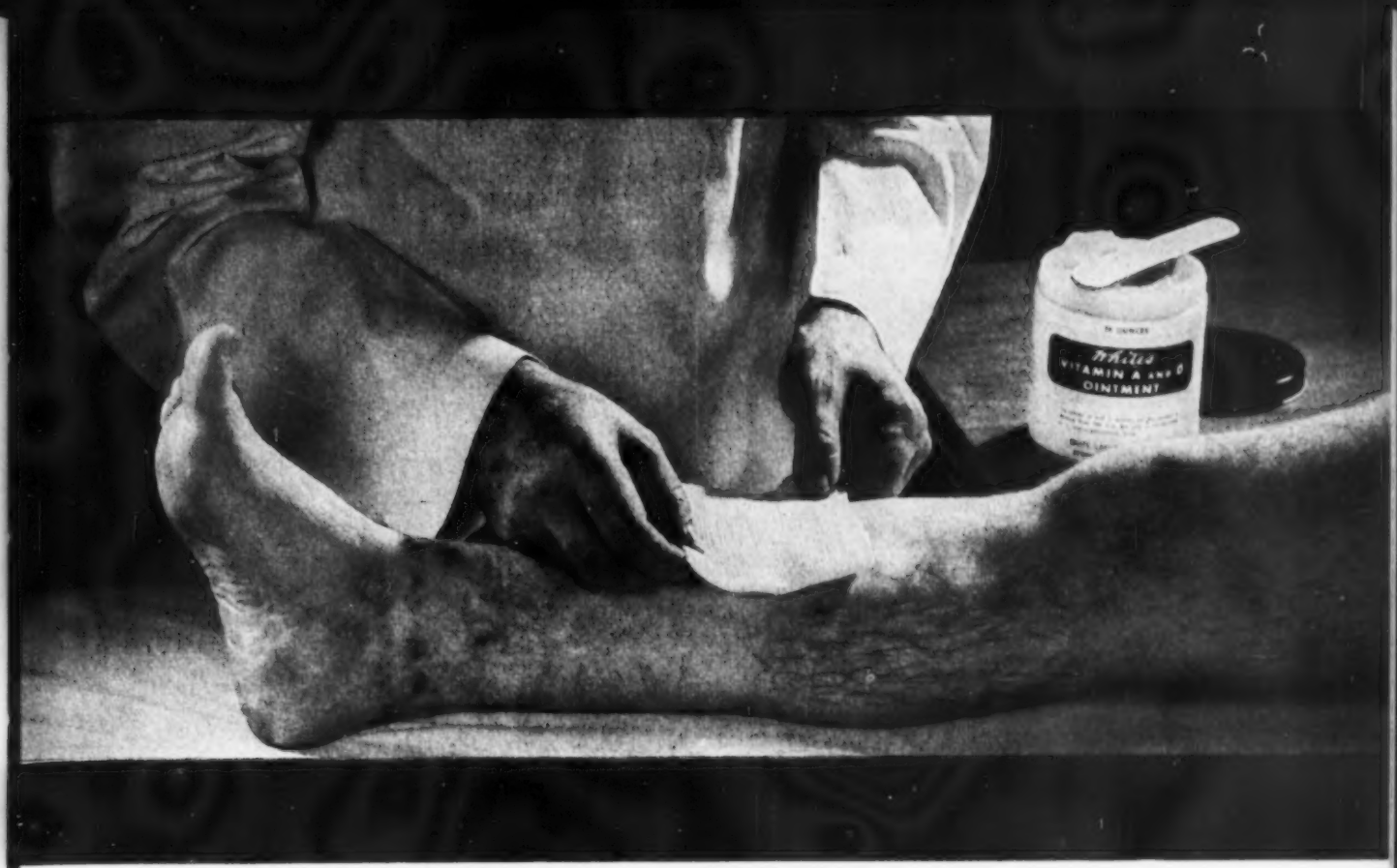

ACCELERATING RESPONSE IN RESISTANT BURNS • WOUNDS • ULCERS

Topical application of vitamins A and D in slow-healing burns, wounds, ulcers, is a clinically accepted procedure of proved therapeutic value.

White's VITAMIN A AND D OINTMENT

provides these vitamins, derived from fish liver oils, present in ratio as found in cod liver oil, in an appropriate lanolin-petrolatum base. Particularly efficacious in chronic wounds which have not responded favorably to previous treatment.

Promotes healthy granulation and rapid epithelization without destruction of epithelial elements. Inhibits infection. Lessens need for skin grafting. Forms no tenacious coagulum. No unpleasant odor or excessive oiliness; keeps indefinitely at ordinary temperature.

Supplied in 1.5 oz. tubes; 8 oz. and 16 oz. jars; 5 lb. containers.

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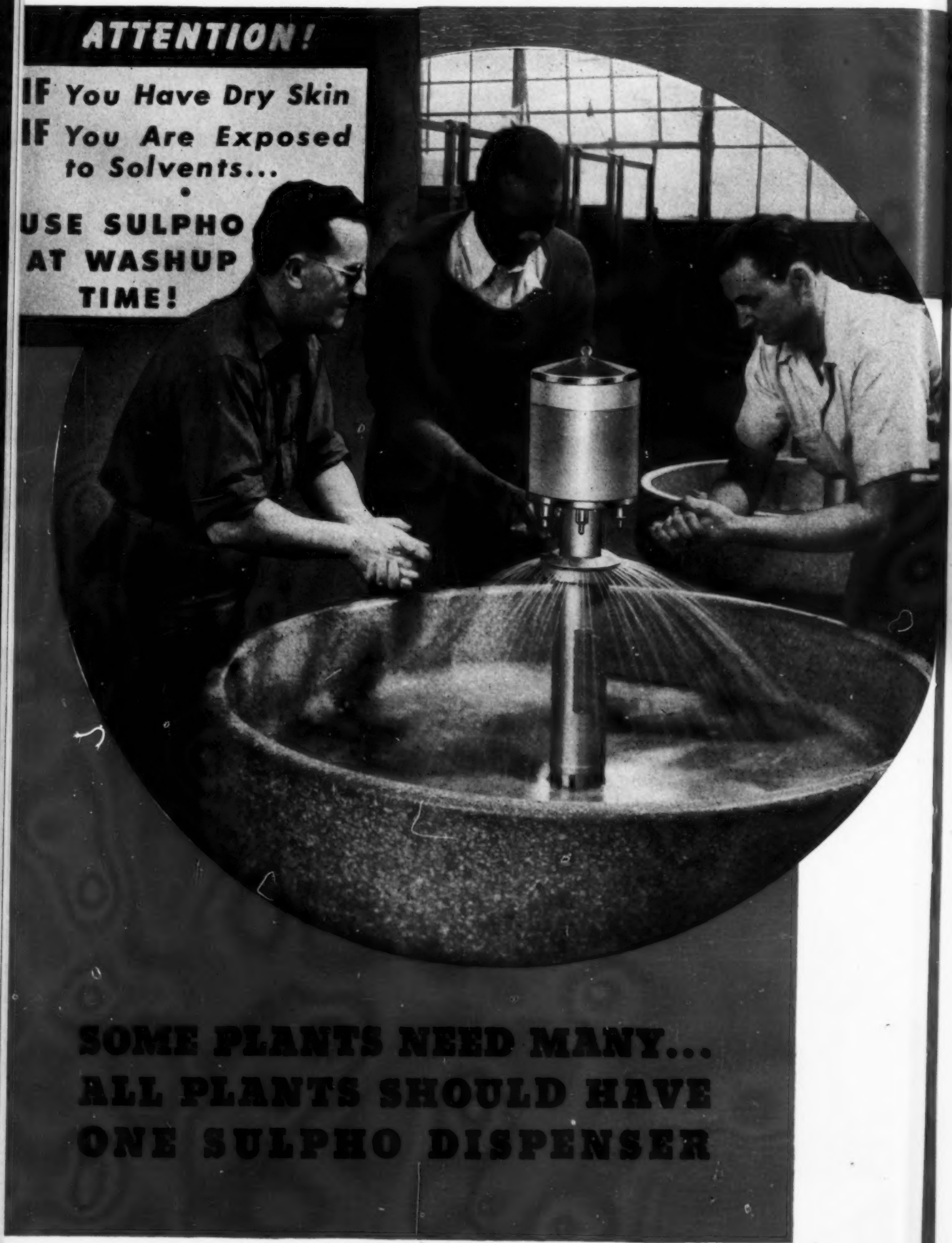
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IF You Have Dry Skin
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USE SULPHO AT WASHUP TIME!
SOME PLANTS NEED MANY...
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ONE SULPHO DISPENSER

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Hand Cleaner - Will Not Defat the Skin

In many occupations, chemicals are encountered which tend to remove the normal fat of healthy skin and make it more susceptible to dermatitis. Some workers have naturally dry skin which cannot stand frequent washing with even the mildest soaps. For those who have naturally dry skin and for those who must in the course of their work dip their hands in solvents, degreasing compounds and similar materials, West offers this new special type of hand cleaner. Due to the nature of the product, it has an almost neutral pH. It is specially designed not to defat the skin. Sulpho is manufactured from the highest quality sulfonated castor and vegetable oils but its cost compares favorably with other products of lesser efficiency.

Many plants using Sulpho Hand Cleaner extensively, find that some workers require an abrasive type of cleaner also. Lan-O-Kleen, the powdered soap compounded with granular corn-meal which has been impregnated with Lanolin, has an amazingly successful history.

West recommends that both Sulpho and Lan-O-Kleen be made available to give all your workers adequate protection.

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Please send us your booklet "Production Safeguards Against Dermatitis" describing Sulpho, Lan-O-Kleen and other important aids in dermatitis prevention programs.

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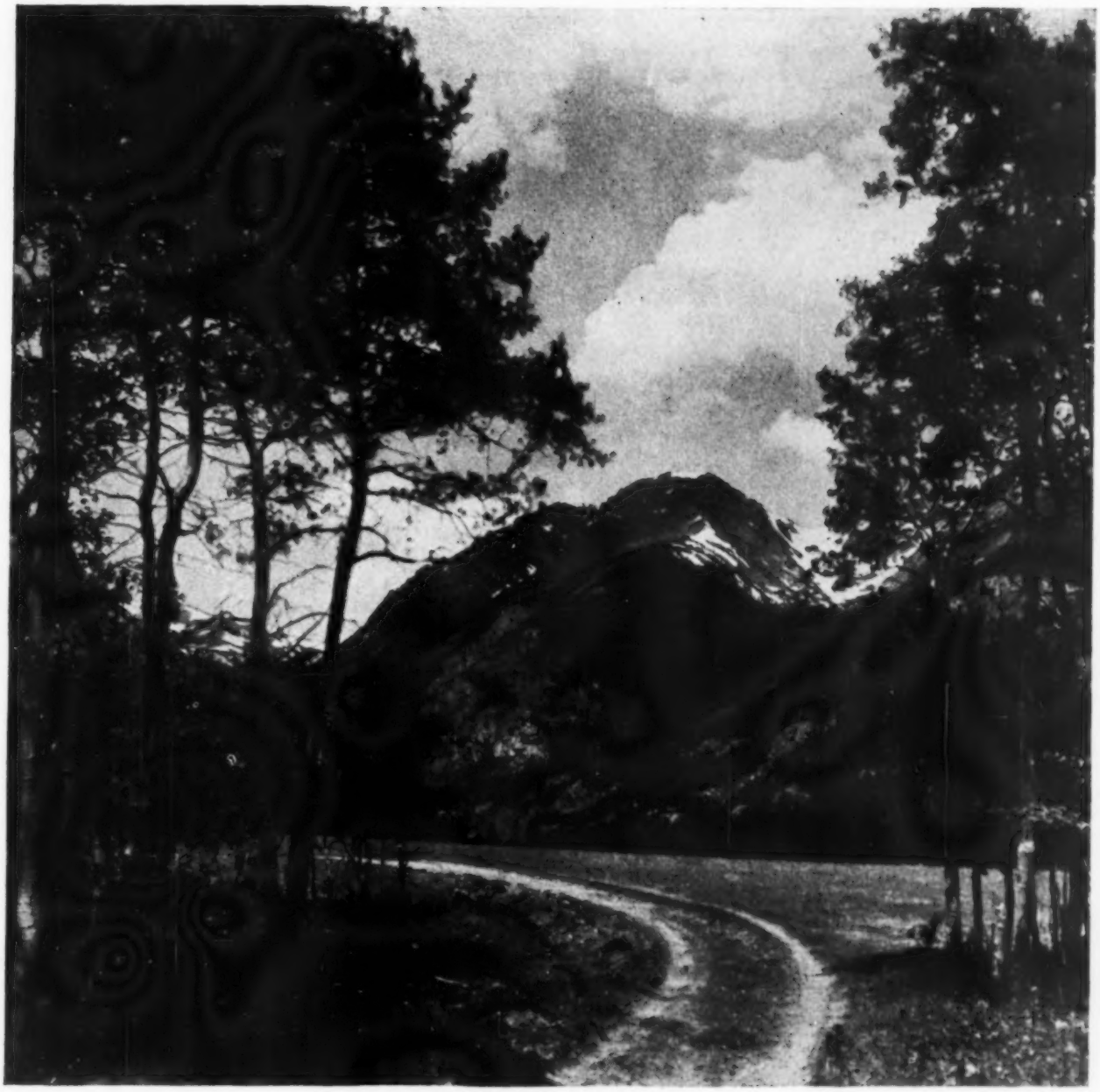
FOR *ORAL* PENICILLIN THERAPY

Per-Os-Cillin tablets—a notable contribution to modern penicillin therapy—contain penicillin calcium combined with special long-acting buffers which effectively protect penicillin from the destructive action of gastric acid. The tablets are stable, promptly absorbed and conveniently taken. Per-Os-Cillin is recommended for the treatment of gonorrhea and for maintenance therapy in pneumococcic, streptococcic and staphylococcic infections. *Per-Os-Cillin tablets, 25,000 units each, are available in tubes of 12.

* For approved uses of oral penicillin see C. S. Keefer, et al., J.A.M.A., 128:1161, 1945

HOFFMANN-LA ROCHE, INC., ROCHE PARK, NUTLEY 10, N.J.

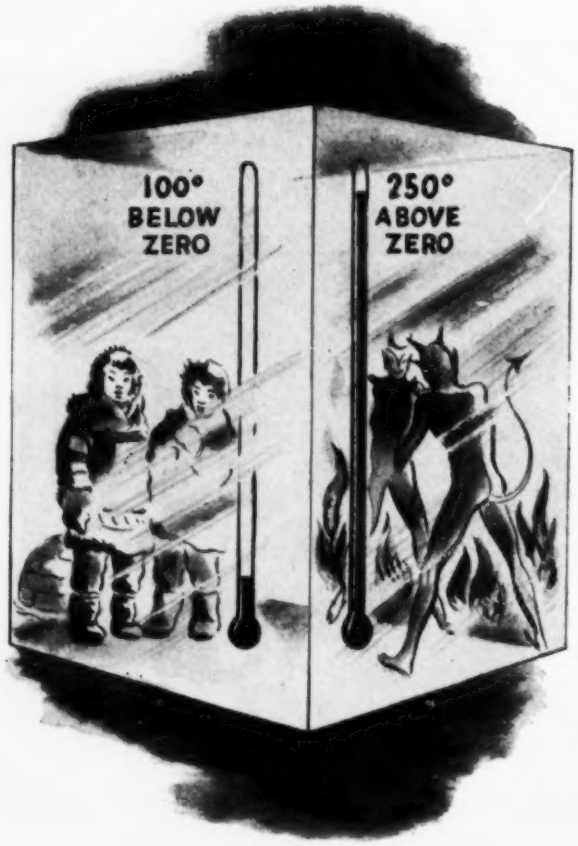


at home, in your own country

To those of you who left your homes to serve your country we extend a warm and friendly welcome, a happy welcome home. The extraordinary service the medical profession gave in the war can't be told here. Here we want to say how glad we are to have you back again, away from the heavy change of war; back into your proper sphere, back again into your peace-time practice, back to a long, peaceful, happy service in the nation's health. ▸ ▸ ▸ Back again at home, in your own country.

GENERAL ELECTRIC X-RAY CORPORATION

Man-Made Weather in a "Box"



Insures Performance of

Curity
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Adhesive Tape

In today's Curity adhesive tape you have an adhesive performance that is precisely predetermined.

As one means of insuring such performance, scientists at the Bauer & Black Research Laboratories invented the "Weather Box"... a mechanical marvel that tests adhesive tapes in temperatures from 100°F. *below* zero to 250° *above!*

Of course, surgical adhesive tape is never subjected to such extremes of temperature. But remember that the men who are able to produce adhesive tapes that *will* perform under extremes of heat and cold are the *same men* who continually check and finally approve Curity adhesive qualities.

Despite raw material shortages, Curity Research Laboratories developed a new adhesive tape that exceeds any we have ever produced. It stays on, is less irritating, has reduced creep and resists aging better than natural rubber.

Today you can expect better results from Curity Adhesive Tape than ever before.

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RESEARCH TO IMPROVE TECHNIC...TO REDUCE COST

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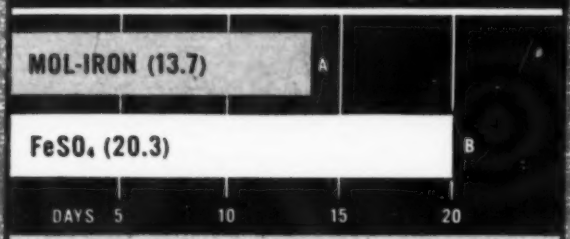
A NEW AND DEFINITE ADVANCE IN TREATING IRON-DEFICIENCY ANEMIAS

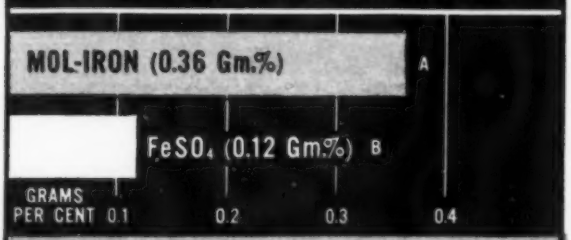
Rapidity of Clinical Response



(A) Completely effective therapeutic response (return to normal blood values) was obtained in an average of 13.7 days of Mol-Iron therapy.

(B) Ferrous sulfate therapy *failed* to produce normal hemoglobin values after an average of 20.3 days.

Average Daily Hemoglobin Increase



(A) The group treated with Mol-Iron averaged a daily hemoglobin increase of 2.48 per cent (0.36 Gm. per cent).

(B) The group treated with ferrous sulfate showed an average daily gain of hemoglobin of 0.83 per cent (0.12 Gm. per cent)—a response about one-third as effective.)

Therapeutic Intake of Bivalent Iron

(A) The Mol-Iron treated group received an average total of 3.528 Gms. of bivalent iron to produce the sought for result (return to normal blood values).

(B) While an average ingestion of 7.871 Gms. of bivalent iron failed to achieve an optimal response in the ferrous sulfate treated group.

The charts summarize the results of a controlled study of comparative therapeutic response in post-hemorrhagic and nutritional hypochromic anemias.

The series includes 49 cases treated with Mol-Iron and 21 with exsiccated ferrous sulfate; the results are typical of those observed in treatment of iron-deficiency anemias with White's Mol-Iron.

A specially processed, co-precipitated complex of molybdenum oxide (3 mg.) and ferrous sulfate (195 mg.).

White's MOL-IRON TABLETS

Available clinical evidence indicates that, in hypochromic anemia, the therapeutic response to this highly effective synergistic combination—as compared with equivalent dosage of ferrous sulfate alone—has unusual advantages:

1. NORMAL HEMOGLOBIN VALUES ARE RESTORED MORE RAPIDLY, INCREASES IN THE RATE OF HEMOGLOBIN FORMATION BEING AS GREAT AS 100% OR MORE IN PATIENTS STUDIED.
2. IRON UTILIZATION IS SIMILARLY MORE COMPLETE.
3. GASTRO-INTESTINAL TOLERANCE IS NOTABLY SATISFACTORY—even among patients who have previously shown marked gastro-intestinal reactions following oral administration of other iron preparations.

INDICATED IN:

Hypochromic (iron deficiency) anemias caused by inadequate dietary intake or impaired intestinal absorption of iron; excessive utilization of iron, as in pregnancy and lactation; chronic hemorrhage.

DOSAGE: One or two tablets three times daily after meals.

Available in bottles of 100 and 1000 tablets.

Ethically promoted—not advertised to the laity.

WHITE LABORATORIES, INC.
Pharmaceutical Manufacturers, Newark 7, New Jersey

ERTRON

is different

● *Therapeutically and chemically,* Ertron differs from any other drug used today in the treatment of chronic arthritis.

● *10 years* of intensive clinical research has established the efficacy of Ertron in the management of arthritis.

● *5 years* of laboratory research has produced definite evidence that Ertron is chemically different.

Simply stated, Ertron is electrically activated vaporized ergosterol prepared by the Whittier Process.

Ertron contains a number of hitherto unrecognized factors which are members of the steroid group. The isolation and identification of these substances in pure chemical form further establishes the chemical as well as the therapeutic uniqueness of Ertron.

Each capsule of Ertron contains 5 mg. of activation-products having a potency of not less than 50,000 U.S.P. Units of vitamin D.

To Ertronize the arthritic patient, employ Ertron in adequate daily dosage over a sufficiently long period to produce beneficial results.

The usual procedure is to start with 2 or 3 capsules daily, increasing the dosage by 1 capsule a day every three days until 6 capsules a day are given. Maintain medication until maximum improvement occurs. A glass of milk, three times daily following medication, is advised.

He Works for a Better Tomorrow

AMID a maze of test tubes, beakers, flasks, and other laboratory apparatus, the research chemist diligently searches for new means of preventing and combating disease. By conducting intricate and delicate experiments, he extracts from nature the secrets of the vitamins, hormones, amino acids, antibiotics, and other substances which are so important in the fields of medicine and nutrition. Slowly, steadily, research has gained ground against the ravages of disease. Much has been done, but much remains to be accomplished. And only by constant application can true progress be made so that the scientist's dreams of the present may become the beneficial realities of the future. Fully aware of their heritage of responsibility, Merck research chemists will continue to work for a better tomorrow.

ASCORBIC ACID

PARENTERALLY

The chemical synthesis of pure ascorbic acid has made possible the parenteral administration of this vitamin in adequate, accurate dosage.

In the presence of gastro-intestinal disturbances, impairment of absorption may precipitate vitamin C deficiency despite a presumably adequate intake of the vitamin. When there is persistent vomiting, diarrhea, or any other condition preventing the utilization of sufficient vitamin C, the parenteral administration of Ascorbic Acid Merck will be of value.

Literature on Request

Crystalline Vitamin C

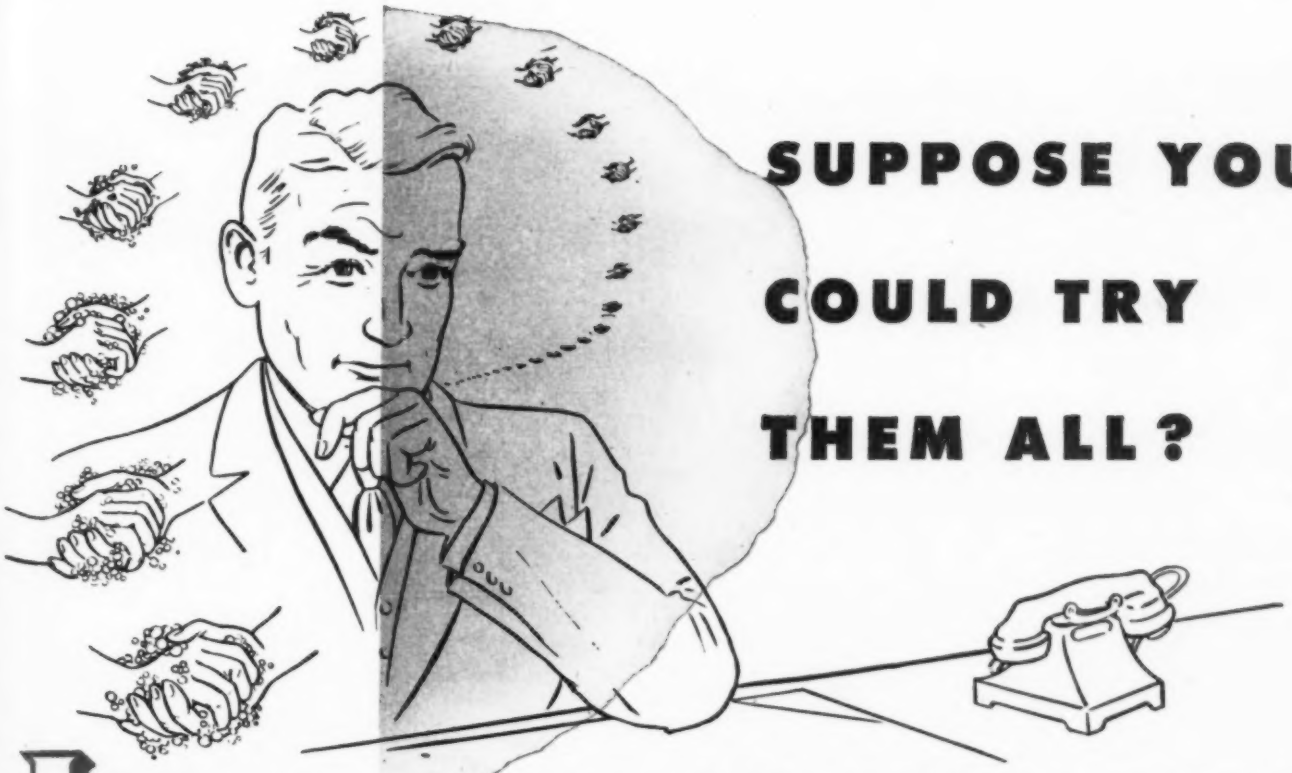
ASCORBIC ACID MERCK

for Prophylaxis and Treatment of Vitamin C Deficiency

COUNCIL ACCEPTED

MERCK

MERCK & CO., Inc. *Manufacturing Chemists* RAHWAY, N. J.



SUPPOSE YOU COULD TRY THEM ALL?

IF IT were possible for you to test every industrial skin cleanser available, we know which one you would choose for the workers in your plant.

FIRST, you'd want to be sure it would clean the heaviest accumulations of imbedded grease and grime from the skin safely, thoroughly and quickly.

SECOND, you would make certain it combined only the finest ingredients, scientifically compounded, to assist in preventing dried, cracked, or abraded skin which might leave it vulnerable to dermatitis or other infection.

THIRD, you would want assurance that it would provide plenty of lather, abundant suds, and would rinse off easily leaving the hands productively flexible, smooth and soft.

FOURTH, you would demand a cleanser that would serve for *all* skin cleansing tasks except those created by special and unusual working conditions.

FIFTH, it should have maintained unqualified acceptance by industry through many years for its unvarying quality.

SIXTH, you would insist it be conveniently dispensed without waste, and that it be economical both in price and usage.

Paxlanosav Heavy Duty Granulated Skin Cleanser would meet your requirements on every count. Approved by, and used in thousands of the largest factories in America, Paxlanosav Heavy Duty daily cleanses and helps safeguard the skins of millions of workers.

PAXLANOSAV* HEAVY DUTY GRANULATED SKIN CLEANSER

ADVERTISED IN AMERICAN MEDICAL ASSOCIATION PUBLICATIONS

PAXLANOSAV—*a plus blend of emollients including lanolin*

FOR ALL GENERAL SKIN CLEANSING NEEDS

Nearly 20 years ago Pax pioneered by providing in Heavy Duty an ample measure of both thorough cleansing and proper super-fatting with soothing emollient oils. Although others now produce powdered industrial hand soaps, containing emollients, a generation of research, development and experience still enables Pax to lead in offering unsurpassed quality in granulated safety skin cleansers.

PAX

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When you purchase any Pax Product you also purchase the experience and ability of Pax Technicians acquired through 20 years of exhaustive research and development.

G. H. PACKWOOD MANUFACTURING CO.

Manufacturers of Fine Industrial Skin Cleansers

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For Unusual and Special Skin Cleansing Tasks

PAX SULPHONATED OIL SKIN CLEANSER

Containing Lanolin

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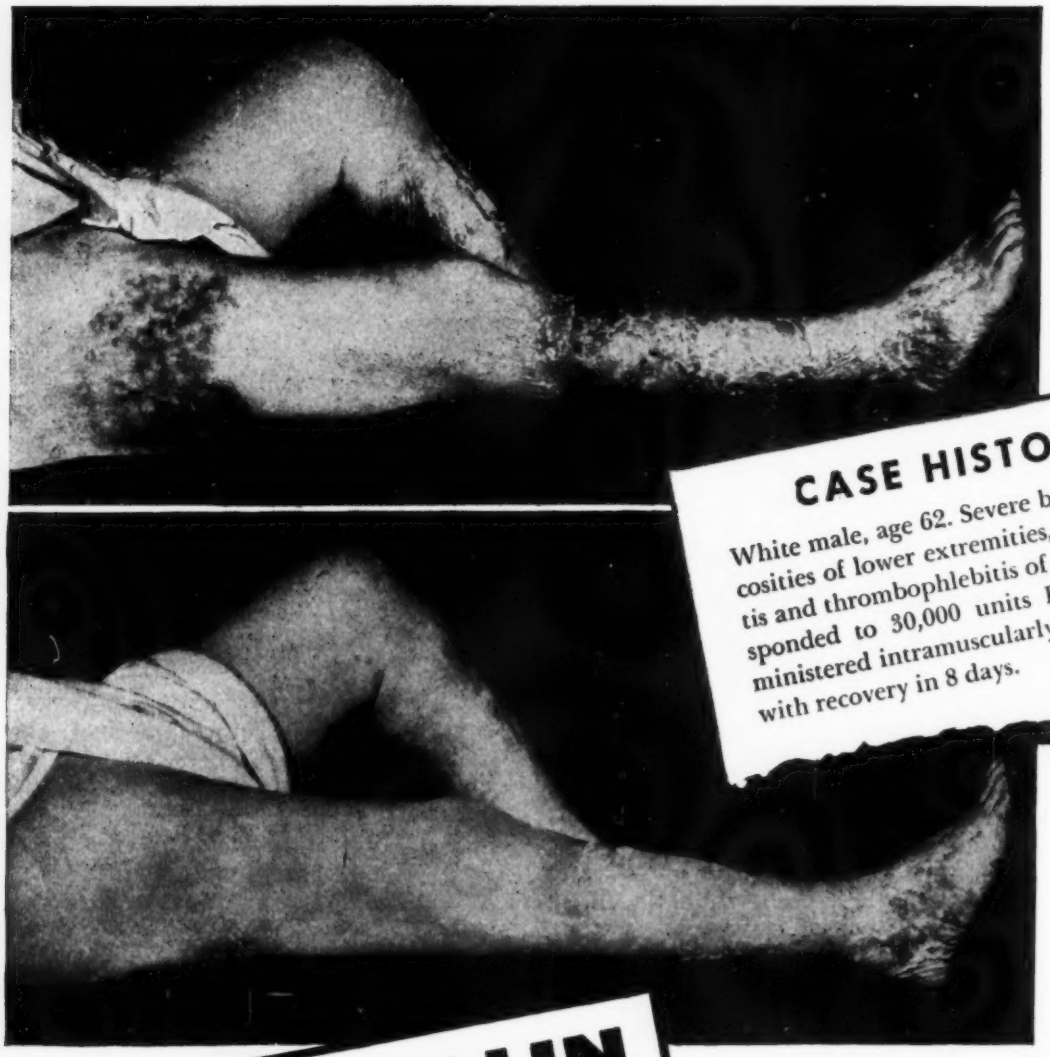
In occupations in which workers are required to dip their hands in severe skin-defatting solvents, degreasing compounds, highly alkaline or other skin-irritating chemicals, Pax Sulphonated Oil Skin Cleanser can be used to supplement General Purpose Pax Heavy Duty Granulated Skin Cleanser. Of highest dermatological quality, non-alkaline, mildly acid, bland, soothing, non-sudsing, Pax Sulphonated Oil Skin Cleanser offers cleansing efficiency unexcelled by any other product of its type.

*TRADENAME OF G. H. PACKWOOD MFG. CO.



CASE HISTORY

White male, age 62. Severe bilateral varicosities of lower extremities, with cellulitis and thrombophlebitis of right leg. Responded to 30,000 units Penicillin, administered intramuscularly every 3 hours with recovery in 8 days.

PENICILLIN in CELLULITIS

Serious local infections such as cellulitis due to hemolytic streptococcic infections—with or without bacteremia—respond rapidly and dramatically to Penicillin.

Initial dosage of 15,000 to 20,000 units is advised. Constant intravenous injection of an isotonic sodium chloride solution follows, allowing administration of 5,000 to 10,000 units every hour, or 120,000 to 240,000 units in a twenty-four hour period. If this method is found inadvisable, 20,000 to 40,000 units may be injected intramuscularly every three or four hours.*

Bristol Penicillin, because of its low toxicity and freedom from pyrogens, its absolute sterility and standard potency, provides dependable therapeutic action.

For additional current literature on the clinical uses of this potent antibiotic, refer to your issues of the BRISTOL PENICILLIN DIGEST.

*Keefer C. S. et al.: New Dosage Forms of Penicillin, J.A.M.A. 128: 1161 (Aug. 18) 1945.

BRISTOL
LABORATORIES
INCORPORATED

Other products of Bristol Laboratories include high-type parenteral medications such as Epinephrine Hydrochloride, Liver Injection, Estrogenic Substance in Oil, and Phenobarbital Sodium.

SYRACUSE 1, NEW YORK
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THE CORYLLOS THORACOSCOPE

WITH SELF-CONTAINED CAUTERY TRANSFORMER AND LIGHT SOURCE

In presenting this improved instrument to the profession, acknowledgment is made to the work of Jacobaeus, Unverricht, Kremer and others, whose technique and instruments have been modified to suit the needs of the thoracic surgeons of this country.

Made in America, exclusively of American materials, by American workmen, the Coryllos Thoracoscope is distinguished by its many unique features, a few of which are described below:

★ Cautery electrodes have an extra sturdy platinum tip, which will not bend when hot or cold, and is shaped particularly for cold blunt dissection.

★ Self-contained shock-proof transformer constructed especially for the exacting requirements of thoracic work.

★ Foroblique* telescope resulting in complete elimination of lamp obstruction of the field of vision.

★ Footswitch control permits free use of operator's hands for manipulation of electrodes and telescope.

Consult your Surgical Supply Dealer or write for descriptive booklet including technique of the late Pol N. Coryllos.

ESTABLISHED IN 1900 BY REINHOLD H. WAPPLER.

AMERICAN CYSTOSCOPE MAKERS, INC.

FREDERICK C. WAPPLER, PRESIDENT

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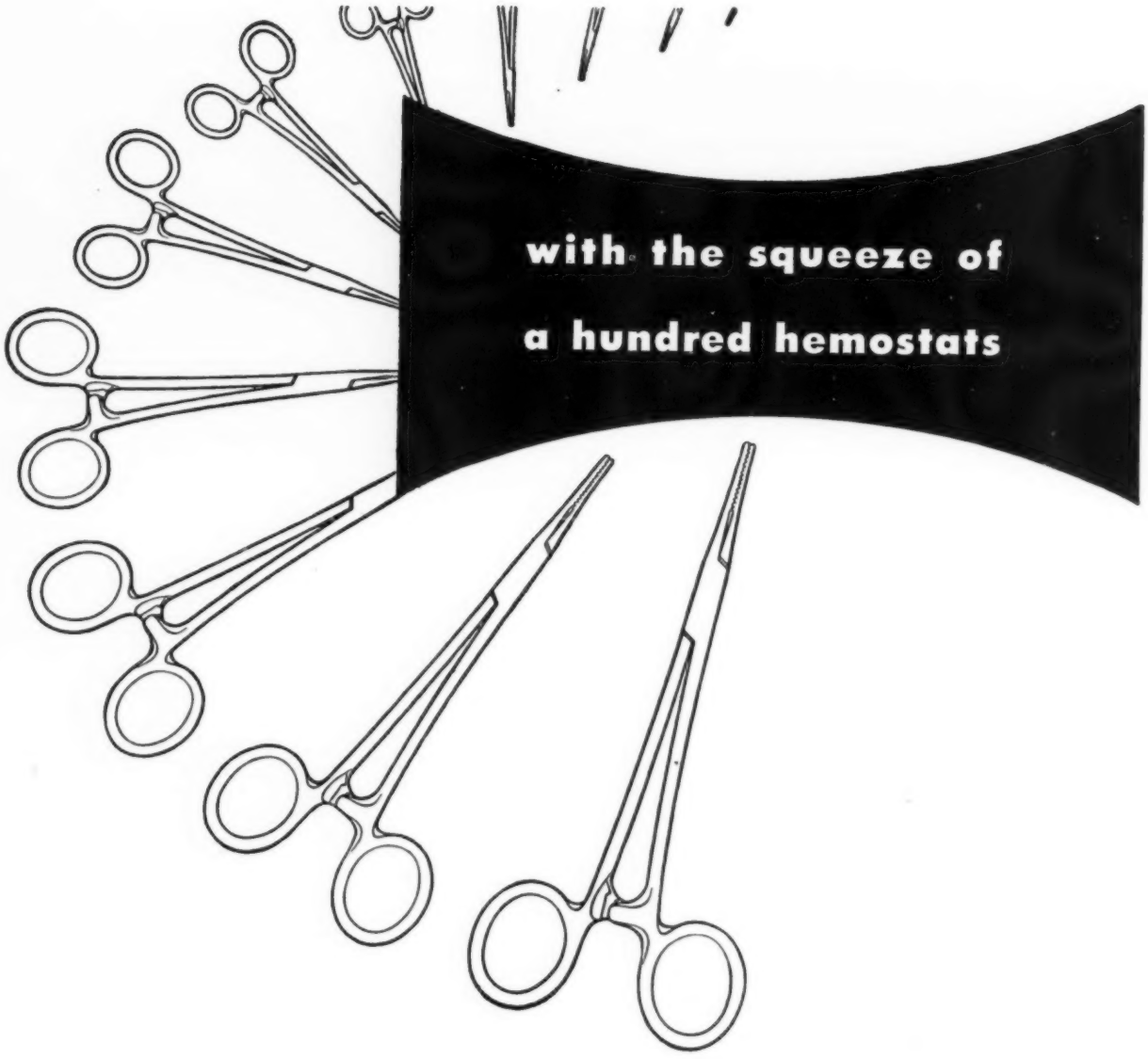

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Industrial Medicine

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Psychosomatic Consultations in Industry

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SINCE the beginning of time man has sought consolation from his fellow-man when he was overtaken by sorrow or disappointment. Likewise, he has sought his fellow-man for advice and treatment for the many complexities of life, illnesses and injuries.

In early civilization, life was simple and man was relatively more independent than today. With simplicity in his mode of living, there was little reason for conflicts in his emotions. As civilization developed and progressed it gave rise to greater complexities in his daily life. It is possible that his emotional balance may have become more delicate with the progressive changes during the course of civilization.

In the earliest phases of medical practice, the physician was greatly limited as to the extent of his treatment with mechanical aids or medicinals. Surgery was only of value in extreme emergencies due to traumatic wounds of battle or accidents. Chemotherapy was of no practical value, although some medicines were used empirically. So one can readily see that it was necessary for the physician to rely on his ability or art in the handling of the complex problems confronting him. The old family physician of years ago, of whom a few remain today, had an excellent concept of the fact that there was a close relationship between man's emotional life and his health or disease. With the years the practice of medicine has been divided and sub-divided into various specialties, and, with this breakdown into specialties, there has been a tendency for the physician to treat conditions rather than patients, losing sight of the fact that the physician should consider the patient as an individual.

All too frequently physicians view a particular case only from a standpoint of the specialty they practice and lose sight of the patient as an individual, while others rely almost entirely on laboratory tests or mechanical aids in making their diagnoses. Sometimes it becomes alarming how so many physicians overlook the importance of the patient's history and the details in the history that may bring forth the important factors in the emotional side of life which may have an effect on his present complaints.

This phase of medicine, which gives proper consideration to man's emotional life, as well as to his strictly physical development, is now called psychosomatic medicine. This may be a new term, but it describes an approach to medicine as old as the art of healing itself. Psychosomatic medicine is an essential part of the practice of industrial medicine, or, for that matter, it is an essential part of all types of medical practice.

Our concept of psychosomatic medicine in industry brings forth an attitude of an "open door" for all patients regardless of the complaint, and impels us to be aware of the large number of people who are sick and yet do not have any definite bodily disease to account for their illness; also, to recognize the fact that the emotional factors in a man's life may have a definite effect on organic disease, and may also play a definite part in his contentment or happiness on the job. In dealing with this phase of medicine, the industrial physician must be cognizant of the fact that anyone may become emotionally disturbed. Emotional disturbances affect behaviors and affect human relations. Therefore, to maintain good human relations in an industrial organization, emotional disturbances must be overcome as early as possible, and the earlier the better.

Although the emotionally disturbed person is sick, at least functionally and mentally sick, he rarely attempts to see his family doctor, and the chances are that he does not even think of consulting a psychiatrist, so he finds himself in what has been called "a pre-psychiatric no man's land." He just worries through his disturbance, or he tells his troubles to a sympathetic listener if he can find one; or he just blows his top, thereby getting relief.

If there happens to be an understanding plant physician at his place of employment, the emotionally disturbed person instinctively goes to him. This is an extremely important function of the plant physician, and it should be recognized as such. The physician must be aware of the importance of proper job placement with the maladjusted individual.

FOR my own assistance in handling this all-important problem of Psychosomatic Consultations, I have developed some "Do's" and "Don'ts" which are as follows:

Presented at the Mid-Winter Scientific Meeting of the CENTRAL STATES SOCIETY OF INDUSTRIAL MEDICINE AND SURGERY, Chicago, December 7, 1945.

Do's

FIRST. Do the patient's examination with four points in mind: (a) medical history; (b) physical examination; (c) laboratory studies; (d) personality study and evaluation.

Think of this as a square with equal importance placed on each side of the square. Too many of us have been conducting triangular examinations with attention paid only to the first three points.

2. Recognize "physical ills" and "emotional problems" and how much of one and how much of the other, remembering that each has an effect on the progress of the other.

3. See the "whole man" and you will see the whole picture.

4. Learn to recognize abnormal emotions.

5. Do the examination and interview in complete privacy if at all possible. No patient likes to talk confidentially in an atmosphere which makes him feel that he is being "overheard."

6. Whenever possible have advance information about the patient. This can easily be done with patients referred to you by the foreman, or the employment or personnel department. It is possible to have a few pertinent facts about the person, such as work record, known trouble with the job, or any other information which may assist with the examination.

7. The physician should be able to evaluate the opinion offered to him by others concerning the patient because too many facts or especially too many opinions may have a tendency to prematurely drawn conclusions.

8. Establish the diagnosis of "functional" illness on its own characteristics and not simply by exclusion of organic disease. Remember the square, the four points of the examination.

9. Study the patient; know the patient's ability to adjust to certain life situations, his way of reacting to them, the degree of anxiety in his make-up, and the nature and seriousness of his conflicts.

Don'ts

FIRST. Don't get so far into psychiatry that you miss organic disease lurking in some obscure corner.

2. Don't hurry the patient or give the impression that you are in a hurry. Avoid interrupting him until he has had an opportunity to give his story in full, and to explain the problem as he sees it.

3. Don't lecture or moralize.

4. Don't pry into personal affairs. If you have reason to believe that the worker's home life or other of his personal experiences may have something to do with his problem on the job, introduce the subject by asking some such questions as "How are things at home? Do you bring any worries to the plant with you?" This assures the worker that you are sticking to the business at hand and are interested in his out-of-plant affairs only as they may have significance for his work efficiency.

5. Don't challenge a patient's statement even though it may be an untruth. This may cause him to become angry or to "close up."

6. Don't question like an attorney giving a cross examination. Casual questions are more apt to be answered truthfully.

7. Don't be afraid of silence. Silence on your part is apt to draw out the other person. If you think of it as "an expectant pause" in which the person interviewed has time to collect his thoughts, you will not be so strongly tempted to fill every gap in the conversation with comments of your own. In interviewing a woman who bursts into tears, the stereotyped, "Now don't cry" is apt to add to her embarrassment or irritation. Simply wait for her to compose herself, realizing that many people talk more freely after a brief shower of tears. Neither should weeping be regarded as an automatic signal to stop the interview, as is often done out of mistaken kindness. Too much silence, of course, can become burdensome; when the silence becomes too prolonged, the conversation can be shifted to some other phase of the problem.

8. Don't disclose information obtained confidentially. This is particularly important in industry.

9. In the absence of organic disease don't dismiss the patient with the firm statement "You have no organic disease." Remember the patient has a problem which may not be solved with such an answer.

PATIENT 1. White male, age 31, single. Veteran of 2½ years. Served one year in basic training, five months in Aleutian Islands and six months in Scotland. Received a minor wound in leg during invasion. Discharged November, 1944, under Section 2.

Previous work record: Employed during the five and a half years subsequent to October 20, 1936, as a (1) metal finisher learner; (2) spot welder; (3) assembler on conveyor; (4) racker in plating department; (5) hood flanger; (6) bench and floor inspector; (7) heavy line operator; (8) general drill operator; (9) heavy lathe operator. Discharged from military service November 10, 1944, and returned to go to work on November 29, 1944.

He was interviewed by the Veterans' Coordinator and made no complaints on his original interview. He said that he had been given a medical discharge due to arthritic pain in his legs and back.

He was sent to the examining physician before reporting for work. Physical examination was essentially negative for any abnormalities. He minimized the reason why he had been discharged from service, so he was approved to return to his former job as a heavy lathe operator. (This particular job is not a heavy job, as the stock is handled with mechanical hoists.)

He reported for work the following morning, but refused to work because he said it was too noisy. He was referred to the medical department. The physician who had examined him the previous day was not available so he was referred to another physician in the medical department.

The patient gave the physician a long story of his great military service and how he had been wounded and had been hospitalized for a long period owing to the nervous condition which had resulted from his battle wounds. He claimed that noise caused his nervousness to become worse, and requested quiet work. The physician gave him a written request for quiet work.

The following day the Veterans' Coordinator called to advise me that this employee had been offered eight different jobs, and had refused all of them. He had been given the opportunity of seeing each of the jobs, and having the job explained to him. He refused all of them because they were "too dirty," "too much oil," or "he just didn't like it," etc.

About this time the Veterans' Coordinator had reached the end of his rope and exhausted his patience, so he wanted to refer the employee to me.

When the patient was referred to me he had a belligerent, surly, antagonistic attitude and I could readily see he would be a difficult patient to handle, so I spent a great length of time in reviewing his past history hoping to find some facts that would give me a lead in helping to solve his trouble.

I learned that he apparently was a congenial young man before entering service and was well received by his friends. He had been a good golfer, shooting in the high seventies, and had played in several club tournaments. He had enjoyed good fellowship. I further learned that since returning he had been so quarrelsome with his former buddies that they refused to have any more to do with him. As he stated, "they gave him the brush off." He had quarreled at home and on one occasion had packed his bag and moved out for several days, but later moved back and seemed somewhat embarrassed about all of this.

In spite of the fact that he volunteered all of this information he refused to see that he was the cause of his own problem. Instead, he wanted to blame everyone for his trouble. I made an attempt to reason this out with him, and to explain it in a pleasant manner, but he only became more antagonistic. I decided this was a patient who would need the facts straight from the shoulder in order to make him see the problem before him. I explained to him very directly and forcefully that he was the one who was "out of step," and that it was not different now from when he had basic training—at which time if he got out of step, he was expected to get back "in step" instead of having the rest of the squad get in step with him. At the present time he was "out of step" with his surroundings, his friends, and his family, and he could not expect the world to change or get in step with him, but he would have to get in step with the world.

He was further advised that the company was at the end of the rope as far as he was concerned, and did not intend to go any further. It was explained that the company had fulfilled its legal obligation to him, and had been more than fair; and unless he made up his mind to "snap out" of it and quit feeling so sorry for himself—well, he would be all through at our plant. I must confess that it was necessary to speak without mincing any words because at first he wanted to argue, but when he was spoken to very firmly he sat and listened. I explained to him that he was physically capable of handling any one of the eight jobs which had been offered to him, and that, so far as I was concerned, I intended to advise the employment department that he could go on any one of the jobs, and if he refused, then he was all through.

He left without commenting too definitely as to what he intended to do. A few minutes later the Veterans' Coordinator called and said: "Whatever did you do with that fellow!" At the moment I wondered what he had done, and could imagine most anything, but the Coordinator went on to say that the patient had walked into his office and said he would take "any job" they had to offer. He seemed to be greatly changed —his attitude was noticeably different.

He was placed on a job as a pipe-fitter's helper, which he accepted. From time to time I made it a point to see him on the job, and he seemed happy and contented. He has presented no problem to date, and has compiled an excellent work record—good attendance, good quantity and quality of work, good attitude —and has even offered some valuable suggestions.

PATIENT 2. White female, age 35, Polish descent. Reported to the medical department November 7, 1945, with the desire to have an extension of her sick leave. This individual had been laid off 10 weeks previously, owing to a reduction of force in her department. During the seventh week of this lay-off she became ill. When she was sent for by her department she reported that she was ill, so she was requested to report to the medical department.

Her complaint at this time was heart trouble and "a feeling that she was going to die if she laid in bed." She was so apprehensive about her condition that she wanted additional time for her sick leave. When reviewing her past history the following was revealed. Her husband worked in an automobile plant, and had been laid off at approximately the same time that she received her lay-off from work. They lived in an upper and her mother-in-law lived in a lower of the same duplex. The mother-in-law took care of the two children, who were of grade-school age, until the mother returned from work each night. During the period of the war the mother had made an attempt to carry on her usual routine household duties in addition to working six days a week in the factory. With both members of the family working they had become accustomed to an increased income and when suddenly both incomes were stopped owing to lay-offs it created a definite reason for worry. As the weeks went by and her husband was not recalled for work it caused her to become very apprehensive about the future. One night about 12:30 A.M., which was approximately 45 minutes after she had retired, she developed a choking sensation with pain in her mid-epigastrium, with a feeling of nausea, and, as she stated, she broke out in a "cold sweat," developed a feeling of numbness of both arms and such a feeling of apprehension that she jumped out of bed and she refused to lie down because, as she expressed it, she was afraid that she would die. The family physician was called and he examined her about 3:00 A.M., supplied her with a sedative, and advised her to rest for several days and then report to his office for an examination. During this interval she was so apprehensive about death that she refused to sleep in bed and would only take short naps on the living room davenport. It is of interest to note that a close friend of the family had died of coronary heart disease some months prior to this episode.

Approximately one week following the onset she was examined in the doctor's office and in addition to a general physical examination there were included an electrocardiogram and a B. M. R. Like many busy practitioners, when he reported the results of the examination the doctor failed to be very explicit and just advised her that she had nothing to worry about. However, he dispensed "heart pills" and "nerve medicine" without giving her an adequate explanation concerning this medication. During the next week or 10 days she made no improvement and actually became more apprehensive in regard to the possibility of death. On the day that she reported to the medical department the possibility of returning to work was most removed from her mind and she was obviously worried.

The physical examination and history brought forth no positive findings except for this feeling of apprehension and worry in regard to death. Great care and patience were exercised in taking the history and completing the physical examination, with special attention being placed on examination of the heart.

In view of the negative findings from our examination and the examination and electrocardiogram of the family physician it was thought advisable to give the patient great reassurance as to her general good health, emphasizing that she had no good reason for concern in regard to her heart. Before the interview was completed she was not only convinced that she had no reason to worry, but also that she was able to return to work.

She returned to work the following day and has worked without interruption to date. She has reported

at periodical intervals for brief periods of reassurance and at the present time she seems completely recovered from her feeling of apprehension.

PATIENT 3. White male, age 24, veteran of the European Theater. Past history: Worked for us prior to entering military service on a job finishing airplane engine connecting rods, which was a job requiring great precision, and where the limits were very fine. He did a good job, but worked less than a year on that particular job.

When he returned from military service his former job had been eliminated and he was placed on a similar job on automobile connecting rods which was almost identical in every way, and it had the same close tolerances. It was a precision job.

After working on the new job for three days he reported to the medical department, and requested a change of job. There might be a tendency on first impulse to think that this was just a veteran with a disgruntled attitude who wanted a change of jobs; however, we have learned that in all cases of this nature it pays to take a careful history before reaching a decision. The patient was asked to give his history.

He stated that he had developed a peptic ulcer while in service and was given a medical discharge owing to this condition. He had spent about four months under medical observation in the Army, and was considered cured and able to resume normal work, and to eat a normal diet, with certain limitations. When he returned to the plant, he thought that he could step into his old job, and was very much in accord with the new job on which he was placed because it was so similar to his old job. He said that he liked his new job, and that it was so similar to his old job that it gave him no difficulty except that the precision demanded on the job caused him to worry about the possibility of making scrap, and it would bother him so much that he would worry about it when he got home at night, and he even dreamed that he was having trouble to keep up on the job, and fretted so much about it that he developed indigestion, and experienced the same pains that had bothered him when his ulcer was active. On first impression it might seem that he was using this as an excuse for a change of work, but when he voluntarily stated that he didn't care if the new job was a lesser-paying one, then I knew that he was sincere in the request, and he further volunteered that he would be willing to return to the precision work after he had become a little more acclimated to civilian life, and that he knew he could handle it without any trouble.

This problem having arisen at the time of reconversion, it was easy to place him on a job as a millwright helper which gave him an opportunity to more or less set his own pace of work without too great tension. He rapidly improved in attitude and health, and at the present time he is still working as a millwright's helper, and doing an excellent job without any complaints from either his foreman or himself.

In my opinion this is an excellent example of how the emotional side of a patient's life may effect not only his general health, but also his work. If this man had been forced to remain on the first job, he undoubtedly would have had great trouble with his ulcer and probably would have had enough trouble to have created a problem for his supervisor and might have "washed out" on the job. Fortunately we were able to transfer him to work suited to him, and to a job that was in great demand at that particular time, and also one for which he evidently had some natural talent. And to date he has succeeded very well.

PATIENT 4. White male, age 43. Was sent to the medical department March, 1943, by his foreman. The foreman advised us that he wished to have the fact verified that this employee was intoxicated, as he planned to discharge the employee because he had reported for work under the influence of liquor. The patient was obviously intoxicated; he was in a very talkative phase of inebriation. He was aware of the fact that his foreman planned to "fire him." He said that his foreman was right, that he should be fired, because he knew that he should not report for work in his present condition.

The foreman was called and asked if he would be willing to postpone the disposition of this case until I had had an opportunity to see what could be done for this man. It was further learned that this man had worked for this particular foreman for a period of two years, and had had a better than average record until about six months prior to this episode at which time he seemed to lose interest in his work and frequently reported with bad "hangovers" and on two previous occasions he had reported intoxicated, for which he had been disciplined. His foreman had very little additional information to offer except to say that the employee's quantity and quality of work had gradually decreased over the past several months. The foreman stated that if it was possible to bring this man back to his former self he would greatly appreciate it because this man had been one of his most dependable workers until six months previously.

The patient was obviously too intoxicated to listen to any reason so no attempt was made to discuss his problem on that particular day, except to advise him that he had not been fired, and that he should report to me the following afternoon.

He reported the following afternoon suffering from a very bad "hangover," but he was not under the influence of liquor. He was in the remorseful stage which is seen so commonly following an alcoholic "spree." He was questioned a little as to his past, and then he voluntarily told his entire history. He stated that he owned his home and had lived a life of peace and contentment with no unusual worries, and had not used any alcoholic beverages beyond a minimal amount in the normal social contacts of life. About six months previously his only child, a boy of 12 years became acutely ill with poliomyelitis and died. Following this, he became so upset that he began drinking, and this drinking gradually became more frequent until it began to interfere with his work, his home, and his general peace of mind, and his only escape from reality was to drink some more.

He volunteered the information that both he and his wife were Catholics, and, as he expressed it, he had been a "good Catholic," until the death of his little son. He further said that he had failed to go to Communion since the death of his son, and now, as he stated it, he was too ashamed even to go to church.

It took a great length of time completely to unfold his past history. At no time was he hurried; at no time was he given the impression that we were not sympathetic or patient with him. It was necessary at intervals during the history to ask an occasional question to bring out further information.

At the end of the history he was asked if he would really like to be re-established in his life, and to avoid the use of alcohol. He sincerely stated that he wanted more than anything else to regain his former self. He was asked if he would be willing to follow my advice and to cooperate with me in this problem, which was definitely his problem. He stated a true willing-

ness, which I knew was sincere. He was advised to consult his priest and lay his entire problem before him; that even though it might cause great humility on his part, it was the right thing to do. He was further advised that, even though I am not a Catholic myself, I knew how important it would be for him and the contentment and peace of mind within if he went to confession and to Communion. He agreed to follow this advice, even to the point of going to an Irish priest who, I knew, was a very understanding person. He was further advised that it would be necessary for him to avoid his former contacts with people frequenting beer gardens and saloons. This might cause him some feeling of embarrassment, but it would be imperative that he avoid the weekly episode of cashing his paycheck in the saloon.

He very gratefully showed a willingness to follow this advice. He was given a medical approval to report for work the following day. However, he was advised to see me early the following morning. When he reported to my office the following morning, he was sober, he was not a "broken man," but a man with a new lease on life. He had been to see his priest (and this was later verified by a telephone call from the priest). I had this patient report to me each morning for about a week. He showed an eagerness to see me, and seemed to be pleased to prove to me that he had not had anything to drink during the interval. I gave him an opportunity each day to talk as little or as much as he wished, and to tell me what had happened or not, as he chose; but he took much pride in being able to relate to me each day what had occurred, such as taking his wife to church, going to Communion, taking his wife shopping, helping his wife with the dishes and general housework, and odd jobs about his home. After this man had been able to reach the second payday without any drinking, I felt that our main hurdle had been surmounted. However, one afternoon he came to me quite depressed and wanted to know if there wasn't some way that he could avoid the embarrassment of walking out to the gate to hand his check to his wife on each payday. He told me that he had suffered some embarrassment by doing this, and that he had taken quite a bit of "ribbing" from his fellow workers because he was handing his check to his wife during the lunch hour on payday. However, he stated that he knew that it would be necessary for some time to come to hand his check to his wife rather than to run the risk of temptation by cashing it himself. I had anticipated this problem and had consulted our legal and payroll departments as to the necessary steps which should be taken in order that his wife could call at the payroll office for his check. This was easily accomplished by having him sign a "power-of-attorney" to his wife. For approximately one month this man would report to me at periodic intervals of a week or 10 days, and advise me of his progress.

After a period of about six or eight weeks he was advised that he would no longer have to consult me unless something came up about which he felt he wanted my advice.

I had not seen this patient for quite some time and had almost forgotten about the case until the last week in September of this same year, when he reported to my office on a very busy afternoon. It was necessary for him to wait a little over an hour before it was his turn to see me, at which time he stated that he had looked forward to this visit, and wanted to express his sincere appreciation for everything that I had done. He related to me how he had once again become an established individual in his own little community, and went to church each week with his wife and how they had re-decorated their home, and had landscaped their yard, and how they had had a very successful victory garden. All of which he expressed with very sincere pride in these accomplishments. He stated that he had never realized how much money he had been spending for liquor until he turned his check over to his wife and allowed her to run the family budget.

This case may seem somewhat removed from the practice of industrial medicine or from the practice of psychosomatic medicine; however, to me this is a more important case, and a more successful result, than had this patient been suffering with an acute appendicitis or a broken leg. It is true, and I would be the first to recognize the fact, that all such cases as this do not, and cannot be expected to, turn out so successfully.

IN CONCLUSION: The industrial physician, as well as all physicians, should be aware of "physical ills" and "emotional upsets" and the effect each may have on the other.

I have said nothing new—nothing that this group did not know, although, perhaps, some had forgotten. But I hope I have served in a small way to stimulate some thinking in the field of psychosomatic medicine.

Compensable Hernia

—The Problems in the Average State—

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THE presence of a hernia is a matter of fact that may be established only by physicians. The compensability of a hernia is decided by law. A brief review of pertinent medical and legal facts may bring out some helpful points for physicians faced with the many borderline problems of employability in and compensability of hernia.

Compensable hernia is an excellent descriptive term that was apparently first developed by Mock.[1] Although a quarter of a century has passed since that time much confusion and frustration is still to be found under the cover of the term. There are wide variations in compensability of hernia between the separate states and between state, interstate and Federally insured employes. The remarks that follow are primarily applicable to employment under the Kentucky Workmen's Compensation Law.* The attitude reflected by the laws and decisions of the Workmen's Compensation Board in Kentucky are about midway between the extremes of almost complete insurance coverage of hernia as an incident of occupation and almost complete exclusion of hernia by accepting for compensation only the rare traumatic hernias.

Incidence

HERNIA is most frequently found in small children. Its incidence reaches a peak at age five. Such herniation of course results almost exclusively from congenital defects. The development of hernia is uncommon throughout puberty. However its incidence again begins to rise during the fourth decade and continues with a declining plateau throughout the rest of life. Nevertheless hernia in adults is not found half as frequently as hernia in children. Since there

*A detailed analysis of all state laws applying to compensability of hernia may be found in Kessler's "Accidental Injuries," Lea & Febiger, Philadelphia, 1941.

are child labor laws in this country compensable hernia must be a problem involving adults only. The observations that follow therefore are made without regard to the variations to the stated facts that are sometimes found in the congenital hernias of childhood.

Almost 90% of all hernias occur in men. Approximately 90% of all hernias are inguinal; 90% of the inguinal hernias are indirect. Femoral hernias account for slightly less than 5% of hernias and are about three times as common in women as they are in men.

A hernia may be found on the left side as frequently as on the right; it may develop simultaneously on both sides. In fact the single hernia ultimately becomes bilateral in 30% of the cases. A hernia may be expected to develop some time in the life of every fifteenth male.

The preceding observations resulted from the study of great numbers of cases by Coley[2] and Colcord[3] and Berger[4] over 25 years ago. These facts have been dutifully repeated by almost everyone who has written on the subject since that time.

Predisposing Factors

THERE are obvious hereditary predispositions, so much so that hernia may become almost a family tradition. Other factors in the make-up of the individual that definitely predispose to hernia are poorly developed musculature, obesity, undescended testicle, lipoma of the inguinal canal and hydrocele. Although medically it is difficult to understand how anything but a traumatic hernia could be expected to develop from the industrial environment the incidence of hernia is higher among those who do strenuous work than among those with sedentary jobs.

Diagnostic Method

INDUSTRIAL examinations like Selective Service examinations are made under the tremendous handicap of a history that is usually entirely negative or badly misleading. If the examination for hernia is competently done one may feel certain that any direct hernias to be seen or felt under the skin have been found. No such certainty can exist about one's ability to find every indirect inguinal hernia in large groups of applicants.

Consistent results must depend upon standardized techniques. The diagnostic method described by Zieman[5] is probably as suitable to industrial examination as any. The one to be examined should be stripped and stand facing a good light with the examiner standing somewhat behind him and to the right. The examiner's right hand is then extended with the palm covering the right inguinal region of the applicant. This is done in such a way that the tip of the index finger rests over the weak spot in Hesselbach's triangle. The middle finger then lies along the course of the inguinal canal with the tip of that finger over the external ring. The ring finger then covers the femoral canal and the fossa ovalis.

The examination of the left side is made with the examiner's left hand as he stands on the left side of the patient. With the hand in this position the patient is asked to cough. Should any suspicious slipping, gurgling or bulging be felt the examination can be followed along the channel indicated.

If the examination for hernia starts by an attempt to insert the finger through the external ring the cord structures on that side are either retracted by a cremasteric reflex or are pushed upward by the examining finger. Haste or ineptitude on the part of the examiner usually results in pain to the one being examined. All these factors lead to distortion of the normal relationships of the parts to be examined. If with the examining finger in the external ring the patient is asked to cough, the resulting pressure may suddenly relax the cremasteric reflex, the local muscle spasm giving the impression of a hernial impulse which might be an entirely erroneous conclusion.

Clinical Observations

THE indirect inguinal hernia is not only the one most commonly seen but it also presents most of the problems in early diagnosis. It seems well, therefore, to begin this phase of our evaluation with the peculiarities of the indirect inguinal hernia.

In its beginning a small tongue of omentum protrudes through the internal inguinal ring along the course of the more or less obliterated congenital sac. At this point if the hernia is demonstrable at all it is usually more easily seen than felt. The beginnings of this hernia are usually associated with repeated small dilatations of the internal ring by omentum which in the intervals returns to its normal habitat in the abdominal cavity. At this early stage when there is no omentum in the sac the bulge can rarely be seen or felt. Indeed, the individual may go through a routine involving the most violent exercise without being able to produce any demonstrable hernia.

At this stage of its development days or even weeks can go by without any apparent evidence of the hernia at all. For this reason the man with a small indirect inguinal hernia frequently feels that his hernia has been healed. Noting it again at some particular time gives rise to the natural conviction that he has "strained himself" *again*. Or, owing to the devious quirks of the human mind, he may find it impossible to remember any previous difficulties in his inguinal ring. Thus the bulge constitutes an entirely new hernia.

It is fairly safe to say that in present industrial practice any internal ring that will admit the tip of the examining finger must in the interests of safety be considered to be a hernia irregardless of the examiner's ability to demonstrate any hernial sac. From this it must not be presumed that it is always possible to examine the internal inguinal ring. Especially in younger men the external inguinal ring may be so snug as to preclude any possibility of the examining finger reaching the internal ring.

With the relaxation of musculature found in the lower abdomen of the elderly and the obese it may at times be an extremely difficult diagnostic problem to decide whether hernia is present, particularly in those individuals where folds of fat and rudimentary musculature make it surprising that any intestinal contents can be retained in the abdomen at all. Prospective employees of this kind are not only a hazard from the standpoint of hernia but they are addicted to the additional problems of backache and low back sprain. Seated work is the maximum that can be safely allowed to most people of this type.

"Relaxed rings" and "potential hernia" are two overworked terms in industrial medicine that necessitate some statement at this point. Colcord[1] carefully examined 6,000 men and felt that 500 of them had relaxed rings or potential hernia. Twenty-five cases of hernia ultimately developed in the group examined by him. Not one of these hernias developed among the 500 men designated by him as having relaxed rings or potential hernia. Most thoughtful industrial physicians have had the same experience, if on a smaller scale.

When an inguinal hernia is incomplete (when con-

tents of the hernial sac have not yet made their way through the external ring) it may be a difficult problem to decide whether the hernia is direct or indirect. If the hernia can be reduced back through the internal ring the diagnosis is simplified. The indirect inguinal hernia of course has its original laterally to the deep epigastric artery. This artery is an important landmark that may be extremely helpful to the surgeon at the time of operation, yet the ability of any examining physician to palpate the epigastric artery is open to serious doubt.

The indirect inguinal hernia ultimately becomes the large one that fills the scrotum. A hernia of this type develops a tough fibrous neck which testifies to its age to the pathologist. The body of the hernia lies in a large sac to which the hernial contents ultimately become adherent. The danger from strangulation is increased not only with the duration but also with the size and irreducibility of these hernias.

Unlike the indirect inguinal hernia the direct inguinal hernia does not come through the internal ring at all but through the weak spot in Hesselbach's triangle. The diagnosis can usually be made without much difficulty even when the hernia is small. It forms a spherical mass that very rarely descends into the scrotum. It seems fairly easy to understand how a hernia of this type might be developed in an older man or one who was quite obese by the strain of some of the heavy jobs in industry. The unfortunate thing for this premise is that so few of the hernias are this type. The hernias that develop following surgical repair for *indirect* inguinal hernias are almost without exception *direct* hernias. The rare traumatic hernias may be either direct or indirect.

Femoral hernias are readily differentiated from the other hernias since they bulge through the femoral ring below the easily distinguished landmark of Poupart's ligament.

In industrial pre-placement examinations there seems to be a higher percentage of incisional hernias than one might expect from a review of operative results in the literature. These of course are much more prone to occur in the scar of the abdominal wound in which postoperative drainage was necessary.

Hernias that are complete are almost never of recent origin. Any person with a hernia larger than a small lemon would be closely cross-examined over a statement that the hernia was of recent origin. Traumatic hernias usually result from crushing accidents and are usually associated with other serious pathology. They are usually small bubonoceles.

It is not unusual to examine a man who has worn a truss for some time and find no evidence of hernia. Unfortunately in such cases the examining physician sometimes fells the man that no hernia has been found and there is no further necessity for wearing the truss. The individual so advised may go to work without the truss only to show up for a medcal examination in a few hours or a few weeks with a hernia—it may even be strangulated. Hernias that have been retained by the use of a truss seem to be more subject to strangulation when they do protrude than hernias that have never known a truss.

Trusses are fairly satisfactory at least for short periods in the control of both direct and indirect inguinal hernias. Because of the tendency of strangulation from femoral hernias it would seem unwise to allow patients the false feeling of security that might come from the wearing of a truss on a femoral hernia. These must be promptly repaired. The wearing of a truss on a femoral hernia always seems to be associated with more discomfort than trusses worn for inguinal hernias. In adults the wearing of trusses or elastic belts for umbilical and incisional hernias probably serves nothing but a cosmetic advantage.

It is of the utmost importance that a close inspection be made of the texture of the skin over all suspicious areas. If a truss has been recently removed it is easy to see where it was. However, if the truss was taken off the previous evening, followed by a long hot bath and not reapplied before examination the next day, only the worn off pubic hair may indicate its presence.

A belief in compensable hernia that embraces more than the rare traumatic variety must accept the fact that hernia results from increased strain. If strain that builds up increased abdominal pressure is to cause hernias it seems odd that herniation so rarely occurs at the weakest point in the abdominal wall—the esophageal hiatus in the diaphragm.

The Kentucky Law

THE compensability of hernia is covered by a special Section (KRS 342.025) in the Kentucky Workmen's Compensation Laws as follows:

Hernia: (1) In all claims for hernia resulting from injury received in the course of and resulting from the employee's employment it must be definitely proved to the satisfaction of the board that: (a) There was an injury resulting in hernia; (b) the hernia appeared suddenly and immediately following the injury; and (c) the hernia did not exist in any degree prior to the injury for which compensation is claimed.

2. In all such cases where liability for compensation exists, the employer shall, within the limits of KRS 342.020, provide competent surgical treatment by radical operation. In case the injured employee refuses to submit to the operation, the employer may require a medical examination as provided in KRS 342.205.

3. If it is shown by such examination that the employee has any chronic disease or is otherwise in such physical condition so as to render it more than ordinarily unsafe to submit to such operation, he shall, if unwilling to submit to the operation, be entitled to compensation for disability under the general provisions of this chapter. If the examination does not disclose the existence of disease or other physical condition rendering the operation more than ordinarily unsafe, and the employee, with the knowledge of the result of such examination, thereafter refuses to submit to such operation, he shall be entitled to compensation for disability under the general provisions of this chapter for not exceeding one year. If the employee submits to the operation he shall, in addition to the surgical benefits herein provided for, be entitled to compensation for his actual disability following such operation. If the hernia results in death within one year after it is sustained, or the operation results in death, such death shall be deemed a result of the injury causing such hernia and compensated accordingly under the provisions of this chapter. This subsection shall not apply where the employee has refused to submit to an operation which has been found by the examination herein provided for not to be more than ordinarily unsafe.

Settlement of Claims

HAVING briefly reviewed the medical and legal background of the problem of compensable hernia it now seems timely to consider what happens under Kentucky law when an individual claims his hernia followed an industrial injury and that he is entitled to the services specified under the law.

The Kentucky Workmen's Compensation Law is optional for both employees and employers. It must first

be shown that both parties to the dispute have elected to come under the terms of the compensation law. If not, an action at common law is the only recourse open to the injured workman who feels that he has not been properly treated following any accident. However the compensation law is almost invariably accepted by responsible employers and employees alike at this time. Therefore the observations that follow are entirely related to the settlement of claims under the compensation law.

Whether the hernia is or is not compensable is a decision that may be reached either through an agreement between the interested parties and/or following a hearing before the Workmen's Compensation Board. The hernia's compensability is not related to whether the hernia is direct, indirect, femoral, umbilical or other. It must be proved that the hernia is of recent origin and that it developed immediately following a specific injury. "Immediately" has been defined as being within 30 days of the injury. Wherever it is deemed that all these necessary conditions are met the hernia is declared to be subject to compensation and an operation is offered the worker. This he must accept within a year or forfeit his rights to the award.

Since the insurance carriers feel that the entire cost of this operation must be met by the $200.00 set up in the law the surgical fee for hernia repair is usually limited to $75.00 for one hernia or $100.00 for a double hernia. In exceptional cases more money can be allowed at the discretion of the insurance carrier but the fees mentioned are usually standard for surgical repair whether the hernia is large or small, inguinal, femoral or other.

In case of a recurrence of the hernia following surgery another operation is offered. Almost invariably the Compensation Board has held that in such circumstances an employee must submit to subsequent surgical operation or lose his rights to compensation.

If there is some reasonable medical grounds for the employee's refusal to submit either to the first operation or to reoperation the Compensation Commission usually settles on a compromise payment to the worker with compensable hernia to the extent of $12.00 to $15.00 a week for a year. Where there seems no valid reason why surgical treatment by radical operation should not be undertaken it has usually been held that the worker has refused proper treatment and is therefore not entitled to the benefits of the Compensation Law. Where, because of the worker's age or the condition of his health, no reparative procedures are done the insurance carrier normally offers to provide a truss in lieu of settlement. If such a settlement is accepted nothing further is done. However, if such a worker wishes to appeal to the Compensation Board he might reasonably expect some additional disability allowance.

The strangulation of pre-existing hernia has not been considered to be compensable in Kentucky.

In many states the employee may elect the injection method of hernial repair. With special training and experience the results from injection treatment are comparable to those from surgery, and the mortality is certainly less. Nevertheless under the terms of the Kentucky Compensation Law the insurance carrier is not legally obligated to provide such treatment. Also, there are at the present time few surgeons with the necessary training or experience to accomplish work of this kind. Therefore, whether compensable hernia is to be repaired by the injection method or not is a matter that is usually decided on the merits of the individual case by the insurance carrier.

Those who work on barge lines and other companies involved in jobs on navigable streams come under the jurisdiction of the Longshoremen's Act which has a more liberal attitude on the repair and compensability of hernia. This latter compensation act recognizes occupational hernia as well as hernia resulting from an injury.

Generally the compensation of railway employees which also comes under a specific compensation law follows rather closely the liberality of the Longshoremen's Act on problems relating to hernia.

Employability Criteria

THE threat of developing hernia is associated with those who (1) have a history of hernias in their family; (2) Have undescended testicle or other tumor of the inguinal canal; (3) Have poorly developed musculature; (4) Are obese; (5) Have large hydrocele.

Since compensable hernia in Kentucky must follow an injury it would seem the safest industrial medical policy to restrict the possessor of any of these handicaps from heavy work or production jobs with power driven machinery. Where two of these conditions are found in the same job applicant it is probably best to preclude all but seated work to that person.

Even though the insurance carriers rarely pay disability claims for unoperated compensable hernias in Kentucky it is widely recognized that the industrial worker is less effective when he has a hernia. The presence of hernia on pre-placement examination constitutes almost no insurance hazard since neither aggravation nor strangulation of hernia is compensable in Kentucky. The grounds for restricting employment of those who are found to have hernia on pre-placement examination must rest on the individual's ability to do certain kinds of work with this physical impairment.

An appreciable reduction in the incidence of compensable hernia can be brought about in most Kentucky industries by more careful medical examination and better job placement both for borderline problems and those with definite physical impairments. It is certainly a dangerous labor relations policy to attempt any reduction of compensable hernia by a more callous and exclusive attitude toward the settlement of claims.

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That Security

RELIABLE observers report that the Rhode Island Sickness Insurance Fund (the only state system in existence) will be insolvent in 1947 if present disbursements and declining contributions continue. A million-dollar deficit this year is predicted. Unless we're poor guessers, the crafty hand of politics has upset the best laid plans in "Little Rhody." Give more and more, for less and less never ceases to be a popular slogan for the office-holder to follow. But it doesn't add up too well from an actuarial point of view. So then the tax mill has to start in grinding again. Mr. Truman and Messrs. Wagner, Murray and Dingell, please copy.

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Use and Abuse of Radiographs in the Diagnosis of Mouth Infection

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CHRONIC oral infection is an affliction of the vast majority of the American people and is a direct and indirect cause of a multitude of systemic diseases and other disturbances which result in varying degrees of disability. In my opinion it is an important cause of the degenerative diseases which become apparent in middle life and shorten the life span of the affected individuals.

These facts have been impressed on the dental and medical professions and the laity over a considerable period of time but there is still a continuing high incidence of unrecognized oral infection. To be conservative, let us say that this condition exists in over 90% of our people.

There are many reasons for this continuing high incidence and a few of them were mentioned and partially discussed in previous papers.[1,2] One of these was the existence of several misconceptions on the part of a large per cent of dentists and physicians as well as the laity. One of these exceedingly prevalent misconceptions is that one can diagnose all mouth infection by means of the x-ray alone.

I say "exceedingly prevalent" because it is all-day routine in the office of the oral surgeon to consult with patients who have been referred by dentists and physicians with instructions to perform specific operations, and these instructions have been based on a dental or medical x-ray laboratory diagnosis made solely from radiographs. Many of these so-called diagnoses are made by laymen technicians, but the majority are made by members of the dental and medical professions including many of the radiologists in our best hospitals. It might be advisable to add that very few of them have had much training in the exceedingly complicated field of clinical oral pathology.

When one who has had such training reads the pseudo-diagnosis and then takes a history and competently examines the mouth, he can, in most instances, come to no other conclusion than that the diagnosis is ridiculous. He may, of course, use other terms for it, depending on the degree of his conscientiousness regarding the value of teeth as well as the importance of health and life to the patient.

I say "ridiculous" because the competent mouth examination will repeatedly reveal that many regions are healthy which were marked as diseased, and conversely many regions are diseased that were passed over as normal.

I do not, by any means, wish to intimate that oral radiographs are useless. A competent mouth examination cannot usually be made without them. But, they are only *one* important adjunct in making a competent mouth examination and diagnosis. Radiographs are only shadow pictures. They reveal only differences in penetration of x-rays in proportion to the differences in radiopacity of the tissues through which the x-rays pass.

Radiographs show only changes in calcified bone structure, and not all of these changes because the shadows of by far the largest per cent of the bone around teeth are hidden by the shadows of the teeth themselves.

At least half of the quantity of all mouth infection occurs in soft tissues, and ordinary acute infections, Vincent's infection, and other changes in soft tissues are not revealed nor even suggested by radiographs unless pathological or physiological involvement has progressed to the point of causing changes in the structure of adjacent bone tissue. Here let me add that, in my opinion, soft tissue infections constitute at least as serious a focus of infection as apical infections.

Whether the resultant changes in bone structure adjacent to the gum tissues are normal or abnormal cannot be interpreted competently unless one has had a wide experience with and knows the countless variations in the appearance of normal bone shadows.

Whether abnormal bone shadows in the radiograph indicate pathological or only physiological changes has to be determined in conjunction with a competent and thorough mouth examination. This must include a complete history and a search for flat contact points, cracked teeth, overhanging fillings, calcareous deposits, ill-fitting dental appliances, and tumors. It must also include a check for traumatic occlusion and closed bites as well as an electric test for vitality on all teeth. A detailed discussion of mouth examinations was given in a previous paper.[3]

There are exceptions to the above, but these apply only to localized regions and are few in relation to the overall situation.

Gums and Adjoining Tissues

THE examination of the gums and adjoining tissues must include exploration between the gums and the roots with suitable instruments in order to determine the depth of attachment of these tissues to the roots around the whole circumference of every tooth in the mouth.

Exploration of the depth of attachment of gums and adjoining tissues to tooth structure is necessary because whether or not there is chronic infection under the gum tissues depends on the depth or distance between the gum margin and the level of attachment to the tooth. It is my considered judgment that, if this depth exceeds 5 mm., the normal secretions from this sulcus can not flow out as fast as bacteria from the mouth will infiltrate and, therefore, such a condition constitutes chronic infection. This is true even if no inflammation or exuding pus is apparent. If medical treatment could sterilize or make healthy such a region today, tomorrow it would be diseased again. Considering the anatomical relation of the tissues and the bacterial environment, no other conclusion seems tenable.

This conclusion holds true whether this depth be due to a detachment of the tissue beyond its normal attachment with the gum margin in its normal position, or whether this depth be due to a normal attachment of the tissue with the gum margin above its normal position. The first situation may be generally understood but the latter condition seldom is, and it prevails most frequently on molar teeth tipped forward because of the loss of teeth anterior to them, and on the distal and buccal of erupted lower third molars where the throat and cheek and consequently the margins of the gum tissues are almost even with the level of the occlusal surfaces of the teeth. This situation constitutes a most serious focus of infection, possibly because of the highly absorptive tendencies of throat tissue. One must add here that practically all impacted third molars become chronically infected following the exposure to saliva of any part of their crowns.

In the above situations, the depth or distance between the gum margin and the level of attachment to

the tooth exceeds a physiological depth of 5 mm. and constitutes chronic infection which is often not recognized. Conversely, a situation in which the normal attachment of the tissues to the tooth has been destroyed half way to the end of the root is usually called chronic infection, but it is *not* if the physiological depth has been maintained by surgical resection or by physiological recession of the gum tissues.

In order to determine the existence of chronic infection, exploration of the depth of attachment of gum and adjoining tissues to tooth structure is obviously necessary because the radiograph can not give this vital information.

All that the radiograph can show, even if taken at correct angles and with proper penetration, is the depth of absorption of calcium salts from the normal bone level adjacent to the roots of the teeth. Even this absorption is shown only of a region constituting a few degrees on each side of a root of a tooth out of a total of 360° of the root's circumference. The shadows of the bone in the remaining degrees of the circumference, at least 340°, are hidden behind the dense shadow of the root itself, as is all of the region of the bifurcation between buccal and lingual roots of teeth.

The shadows of the few degrees of the circumference of the root of a tooth that do show in a radiograph do not reveal infection. As stated above, they show only changes in bone calcification or structure. A competent mouth examination must be made in order to determine if such changes or variations are physiological or pathological.

Even if the radiograph reveals a great depth of so-called bone destruction, this does not necessarily mean infection since any type of inflammation can cause nature to absorb the calcium salts from the bone. Such inflammations may be either local or systemic in etiology. Local causes may be acute gingivitis, tumors, irritating deposits on the teeth, overhanging fillings, flat or improper contact points between teeth, ill-fitting dental appliances, traumatic occlusion of teeth (a very common cause), etc. Systemic causes may be vitamin deficiencies, drug and metal poisonings, diabetes, blood dyscrasias, etc. In fact, a large number of systemic diseases give the first evidence of their presence in the body by causing gum tissue inflammations in the mouth. In a paper written in 1916,[4] I named over 75 such diseases with mouth manifestations, and that list could be immeasurably increased today.

Where an inflammation of gum tissues has been followed by chronic infection with resultant detachment of these tissues from the root of the tooth, the depth of this detachment is the determining factor in diagnosing whether the disease can be treated successfully by non-surgical methods, whether surgical gum resection is required to restore the tissues to health, or whether removal of the tooth is deemed necessary. The width of the detached region may involve the whole circumference of the root or it may be only one mm. in extent. As pointed out previously, the depth of detachment and its width can not be determined by radiographic examination alone. Successful treatment must have as its end result a physiological depth between the gum margin and the level of attachment of the tissues to the tooth root.

One is often confronted with cases where, from the radiographic diagnosis, all the teeth in the mouth have been ordered out as hopelessly diseased whereas a competent mouth examination reveals all teeth in a state of health. In such cases, the calcium salts has been absorbed from the bone, possibly half way to the ends of the roots of the teeth. The mouth examination, however, has revealed a normal attachment with active inflammation the cause of the bone absorbtion, or it has revealed natural recession of the gum tissues to the extent that there is a physiological depth between the gum margin and the level of attachment.

Vice versa, radiographic diagnosis has given a clean bill of health to the teeth when practically all were hopelessly diseased. In such cases, there was detachment of the tissues almost to the ends of the roots of the teeth, but the resultant bone absorption was hidden by the shadows of the teeth. These cases are the most tragic because the physician has relied on the pseudo-diagnosis and the patient's systemic involvement has progressed to irreparable invalidism before a competent diagnosis was made.

Because of the aforementioned facts, one can understand why the so-called proof of re-attachment of tissues to teeth following some touted treatment does not fool the oral surgeon. Such "proof" is the demonstration in a radiograph of the recalcification of bone by comparing it with a previous radiograph showing a deeper destruction of bone previous to treatment. This "proof" is no evidence of reattachment of the tissues to the roots of teeth. These tissues were never detached to the radiographically demonstrated depth in the first place because calcium salts in the bone matrix are always absorbed to a greater depth than the detachment of tissues, and the amount greater is dependent on the amount of active inflammation present. All of the "proof" that the radiograph demonstrates is that some of the active inflammation has been ameliorated, thus allowing some of the normal bone matrix to become recalcified.

One should note here that, if there is detachment of tissues almost to the end of a root of a tooth, the bone absorption, due to the inflammation, often includes most of the bone along the root of the adjoining tooth without any detachment of its tissues. The radiographic diagnosis condemns both teeth whereas the mouth examination reveals that the adjoining tooth is healthy.

Changes in Apical Bone Structure

ONE could discuss interminably the various ramifications of the diagnosis of chronic gum tissue infections and their sequelae in the underlying bone, but let us now consider apical disturbances which cause absorption of calcium salts from the bone in the apical region. These changes in bone structure are evident in radiographs and are usually called abscess.

In the radiographic pseudo-diagnosis, a pulpless tooth, which does not show bone destruction at its apex, is passed over as showing "nothing wrong," thus leaving the intimation, to one not conversant with oral pathology, that the tooth is healthy. The fact that the tooth is pulpless is all the "wrong" that the oral surgeon wants to know for he is routinely curing patients of serious systemic manifestations of infection by removing such teeth. In fact, the infection from a pulpless tooth showing "nothing wrong" in the radiograph may be exceedingly more virulent than that from a pulpless tooth showing a large region of apical bone destruction. Many cases of iritis show improvement within two hours of removing one such tooth.

Furthermore, a pulpless tooth showing "nothing wrong" may really have "something wrong" because, as mentioned in the discussion of gum infections, periapical bone destruction due to infection may be hidden behind the shadow of the end of the root. This is especially true with upper teeth where the rays from the x-ray machine are directed from a high angle. In fact, the outline showing in the radiograph as the tip-end of the root of an upper tooth is not the outline of

the tip-end at all; it is the shadow of the side of the rounded end of the root. If the root-end is very broad, the distance between the actual root-end and the side of the rounded end of the root may be great enough for its shadow to obscure the shadow of a large amount of bone destruction. Furthermore, on multirooted teeth, shadows on the end of one root may be hidden behind the other root or roots.

The fact that a tooth is pulpless is demonstrated in the radiograph by a shadow of a root-canal filling that a dentist has placed in the root of the tooth. But teeth, that in the radiograph show no evidence of a dentist's having filled the root, are not necessarily vital. They must be electrically tested while making the mouth examination because pulps may die from injuries to teeth or from the irritation of deep fillings without any radiographic evidence of this fact.

Teeth that are covered with gold, silver, porcelain, or other filling material, to the extent that they cannot be tested, are often presumed to be vital if no radiographic evidence discloses otherwise. Many of these teeth have dead pulps and no patient can be given absolute assurance of the vitality of the pulps of such teeth unless the artificial covering is removed and an electrical test made. This may sound radical but it is not as radical as failure to discover an infected tooth, especially if this tooth is causing serious systemic disease in the patient.

Teeth that, in the radiograph, show no evidence of a dentist's having filled the root-canals, may show bone destruction around their apices. Usually these changes in bone structure are called abscess by the radiographic pseudo-diagnosis, but exactly the same absorption of calcium salts from the bone can occur on vital teeth and be entirely due to non-pathologic inflammations caused by traumatic occlusion or other factors. Such teeth are not infected and, if the cause is removed, the non-pathologic inflammation subsides, the bone recalcifies, and we usually have a restoration of normal cancellous bone structure. Restoration, however, may be by sclerotic or other non-normal bone structure but it will be structure that is entirely physiologic.

One must also mention that normal foramina and canals as well as maxillary sinus and nasal cavities, when their shadows overlie tooth apices, are often diagnosed as apical disease.

Let us next consider the cases in which a tooth apex is actually involved by chronic infection and the bone destruction has progressed to the stage of involving, in the radiographic appearance, considerable bone around an adjoining vital tooth. Almost invariably the radiographic pseudo-diagnosis states that both teeth are involved and must be removed. The destruction of bone "around" the adjoining tooth may appear this way because the shadows are superimposed when actually one may be behind or in front of the other with no connection at all. Even if the bone destruction is "around" the adjoining vital tooth, almost invariably, by competent management, the tooth may be saved in a condition of health. It should be remembered that one can not tell whether or not this adjoining tooth is vital unless it has been tested for vitality.

Edentulous Regions

NOW let us consider regions where teeth have been removed. Often the radiologist will not even think it necessary to radiograph these but they are usually the regions that it is most important to radiograph. When a tooth is diseased, the surrounding bone is usually much more diseased than the tooth itself and just "yanking out" the tooth does not remove this diseased bone. Nature is marvelous in her reparative powers and possibly, in a large majority of cases, will make this diseased bone healthy. In many cases, however, the diseased bone stays diseased, heals over, and from surface inspection appears normal. Such disease will always slowly spread, unless it changes to acute infection, involving more and more bone even to the extent of destroying the whole jaw and, if the process proceeds slowly enough, will cause no pain or other clinical symptoms of trouble.

Thus it is evident that, when looking for focal infection, all edentulous regions must be radiographed. When they are radiographed, radiographic diagnosis certainly does run the gamut from regions marked disease that are entirely physiologic to regions given an OK that are extensively diseased. Seldom can a competent diagnosis be made without a mouth examination.

Postoperative Regions

WHERE an impacted tooth has been recently removed, disease curretted, or a cyst removed, the radiograph naturally reveals a large amount of bone missing. Without a history this is almost invariably diagnosed as disease. Such instances obviously demonstrate that it is ridiculous to attempt to diagnose from the radiograph alone.

After an operation on the jaw in which bone has been removed, it takes several months for nature to rebuild and recalcify new bone cells in this region. The structure of this new bone may be similar to that of the surrounding bone, or there may be innumerable variations in structure which may simulate various pathologic conditions, and are often so diagnosed. The appearance of the new healthy bone that is rebuilt after the removal of a large cyst may simulate adamantinoma. Fibrous scar tissue may replace bone cells in parts of the region and, if so, there will never be calcification and, from radiographs alone, this scar tissue will usually be diagnosed as retained infection. Many postoperative regions, and especially those where canine fossa operations have been done on the maxillary sinus, may simulate osteomyelitis or necrosis and be so diagnosed. In any region where teeth have been removed, the ridge may absorb laterally leaving a thin ridge of bone which is more radiolucent than a normal thickness of ridge and is, therefore, often diagnosed as cyst or disease.

Discussing this phase of the subject, reminds us that overexposure or too much penetration by x-rays will entirely blot out thin cancellous structure anywhere resulting in radiographic diagnosis of cyst or disease. Also, dense cortical plates of bone will blot out disease changes in less dense cancellous structure so that a radiographic OK is given to a region that even a cursory mouth examination reveals as a mass of disease exuding pus through many sinuses.

Acute Infections

ONE should mention here that involvement of bone structures by *acute* infections, such as acute abscess or osteomyelitis, may not give any radiographic evidence of bone change for several days. Because of this, we find terrific pain or large acute swellings of cheek, lips or neck diagnosed as "not of dental origin" because of the radiographically normal bone structures.

After an osteomyelitis has progressed extensively, the calcium salts may be entirely absorbed from the bone around the whole root of a tooth, and this situation seems to call for a radiographic diagnosis that

the tooth must be extracted because it is hopelessly diseased. Such a tooth, however, may retain normal attachment of bone matrix cells to its root and can, therefore, be retained and become a healthy tooth with subsequent recalcification of the bone cells around it. Because of temporary interference with nerve function as a result of the acute infection, a test proving vitality of the pulp may not be obtained for several months.

One must note here that, with an immensely swollen tongue, cheek, lip or throat and accompanying high fever, malaise and other serious toxic systemic symptoms, it is unnecessary punishment to submit a patient to the discomfort and serious delay of a radiographic examination. It matters not what the radiograph may show in such a case. A competent diagnostician will lose no time in following procedures necessary to quickly bring the acute infection under control. The original cause is not dealt with until all of the acute infection has subsided. For example, when acute infection from an abscessed tooth has spread through the bone and out into the soft tissues of the throat, such a dangerous condition is far past that of a simple abscessed tooth. Our immediate concern is the acutely infected throat and the tooth must be temporarily ignored.

Other Errors in Diagnosis

OTHER errors involve the various normal bone canals and foramina of the jaws which appear as dark areas in radiographs and are often diagnosed as abscess, cyst, disease, etc. In addition, the shadows of the nasal passages, the maxillary sinuses and the malar bone are frequently diagnosed as cysts. Normal partitions in the maxillary sinus may give an outline resembling a cyst and be so diagnosed. Sometimes it requires not only a clinical examination but also an exploratory operation to determine if some regions are cyst or maxillary sinus because cysts extending from the bone into the sinus often lose the radiographic outline of their periphery.

Often we find perfect porcelain fillings called cavities because they are radiolucent. When the shadow of a porcelain filling overlies the shadow of the pulp of a tooth, the diagnosis is a cavity involving the pulp with extraction advised, whereas the mouth examination shows a shallow porcelain filling on the side of the tooth next to the cheek or tongue with no possibility of pulp involvement.

A frequently wrong diagnosis is caused by a defect in the manufacture or processing of the film. Such defects simulate cavities, broken roots of teeth, stones in the submaxillary ducts, fractured jaws, etcetera.

Sclerotic bone which has replaced normal cancellous bone is of frequent occurrence in the jaws and is mistaken for broken off buried roots of teeth. Exostoses on the surface of the bones is usually diagnosed as sclerotic bone in the cancellous structure.

Cleft palate and other developmental defects appear as dark areas in films and are often diagnosed as disease or cysts.

Broken buried roots of teeth are often diagnosed to be in the maxillary sinus when they are in the bone and, vice versa, in the bone of the jaw when they are in the sinus.

When a patient has facial neuralgia and a cause is being sought, some dentists and physicians search first for pulp stones in teeth. It is rare that such stones ever cause neuralgia. Most diagnoses of pulpstones are erroneous anyway, the appearance on the film being due to the varying thickness of the tooth structure surrounding the chamber containing the pulp.

In regard to foreign bodies such as bullets, broken instruments, fillings, and broken pieces of teeth apparently fallen into tooth sockets, broken hypodermic needles in the throat and other regions, etcetera, their position is often diagnosed incorrectly, which mistake in these instances could be rectified if radiographs were taken at proper and sufficient angles. In this connection, one must always remember that the radiograph is a shadow picture of everything radiopaque between the x-ray tube and the film. Just because a piece of metal or other object appears in the radiograph to be *in* the bone of the jaw does not necessarily mean that it *is* in that location. It may be on the cheek side or the tongue side of the bone. It may be in the maxillary sinus if the film is of the upper jaw, or in the tissues of the floor of the mouth or under the tongue if the film is of the lower jaw.

When dealing with a broken hypodermic needle in the throat tissues, the usual method of taking a mandibular radiograph, by raying from a low angle to avoid the shadow of the side of the mandible next to the x-ray machine, will always show the broken needle shadow on the film at a level much higher than its actual position in the tissues. In such cases the raying should be exactly horizontal superimposing one ramus of the mandible over the other. Before operating to remove such a needle, radiographs should, of course, be taken from the opposite plane to give the distance of the needle from the ramus. There are several methods that will reveal this information.

Because of wrong angles of raying, third molars in normal position are often called impacted, and impacted teeth shadows are sometimes shown in a vertical position on the film in which cases the fact that they are impacted is overlooked.

In the routine x-raying of teeth, the practice of some laboratories is to place the machine excessively high for upper teeth and excessively low for lower teeth in order to be assured that the ends of the roots are included in the radiograph. The resultant radiographs are almost worthless and yet many dentists and physicians accept them and the pseudo-diagnosis made from them.

X-raying from wrong or from an insufficient number of angles gives one inadequate information and causes one to miss many abnormal jaw conditions that should be discovered radiographically. Certainly, along these lines, only a small proportion of radiographs measure up to their potential diagnostic possibilities.

Cancer of the Jaws

IN RADIOGRAPHS of the jaws, each type of cancer has a different and characteristic bone pattern. When one of these characteristic patterns is apparent, one naturally suspects that type of tumor, but he dare not diagnose it from the radiograph alone because there are physiologic and other pathologic changes in bone structure that simulate practically every type of cancer structure. For example, the honeycomb type of bone structure found in sarcoma is very frequently found in a region of the jaw where a permanent tooth has failed to develop, and examples could be given for each of the other patterns.

Conclusion

THE bones of the jaws are affected by innumerably more abnormal conditions than are bones elsewhere. This is because of the fact that, added to the conditions elsewhere, we have numberless acute and chronic conditions due to the presence of teeth. Teeth, under some conditions, repair themselves after various types of injury but, in most instances, are incapable of doing

so. They then act as foreign bodies creating continuous irritation to normal tissues over days and years with all of the innumerable pathologic conditions resultant therefrom.

In addition to those mentioned in this paper, one could go on endlessly describing conditions that show the futility of even attempting to diagnose disease of the jaws from radiographs without taking a history and making a competent clinical examination.

To make a more pointed condemnation of the practice of x-ray laboratories diagnosing disease from radiographs, one should certainly point out that a layman technician is legally liable for practicing (diagnosing) without a license and that a doctor is courting malpractice suits when he makes patently wrong diagnoses.

From all of the foregoing, we see that an x-ray pseudo-diagnosis may constitute a detriment to the health of the individual by seemingly indicating disease when none is present, and by failure to disclose existing disease, which gives the individual and the doctor a false sense of security.

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Paraprol in Industrial Dermatitis

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THE incidence of industrial dermatitis is greater than any other form of occupational disease. Weslager[1] reported that approximately 65% of all occupational diseases are skin affections.

Peck[2] reported that cutting oils constitute the most frequent etiologic factors in industrial dermatitis. Many workers exposed to cutting oils develop folliculitis and comedones. A number of patients develop a rash, which is very itchy, and in appearance is similar to measles. The body areas found to be most frequently involved are the hairy portions of the arms and thighs as well as the hands. The chest and abdomen may, at times, become involved.

Schwartz and Peck[3] recently studied the histologic nature of oil folliculitis and found the process to consist of a stimulus to the formation of keratin leading to the formation of a keratogenous plug in the follicular opening. The lesion usually begins as a folliculitis, is inflammatory, and extends some distance into the skin surrounding the affected hair follicle.

The need for adequate prophylaxis and control of industrial dermatitis is urgent and of the utmost importance to industry. With this purpose in view, a clinical investigation of Paraprol* was started in our plant. The formula of Paraprol impressed the author as one that would be effective and help solve our prophylactic and therapeutic problems of dermatitis. The preparation was distributed to employees who where in contact with oils, grease, paints and lacquers.

PARAPROL consists of urea, lauryl sulfoacetate and benzyl alcohol in a specially prepared aromatized demulcent base. The therapeutic efficiency of the individual components in this preparation have been adequately considered by different investigators.

Symners and Kirk,[4] in a report on urea, concluded that: "Urea acts as an antiseptic even in the presence of blood and pus; it is non-toxic; it is innocuous to animal tissues; does not retard the process of repair and produces no irritation of the skin." Rattner[5] did not obtain positive reactions in 500 persons tested with a preparation containing 3% urea in a vanishing cream base. He observed that it had a soothing and healing effect on mild eczematous eruptions comparable to chapped skin. The principle of urea action is that of a strong peptonizing and lytic agent for devitalized tissue. Its action rids the wound of necrotic tissue by a process of chemical debridement. Holder and MacKay[6] stated that "this is accomplished without great detriment to the normal physiologic processes of wound repair and without material irritation or damage to normal tissue cells."

Lauryl sulfoacetate is a detergent having the properties of lowering surface tension, and is effective in the presence of either acids or alkalies. Its function is to facilitate the removal of oil soluble and water soluble skin irritants and contaminants. By lowering surface tension, the cleansing liquid spreads over the skin surface and penetrates the pores. Not only oil and grime, but also solid particles, on the skin are affected.

Benzyl alcohol was introduced by Macht[7] as a local anesthetic. It has been used as a topical anesthetic and found to be very effective in allaying the itching of dermatitis. It is non-irritating to the skin in the 4% concentration present in this formula. Macht's[7] observations that benzyl alcohol is relatively non-toxic if absorbed, since it is converted to hippuric acid in the body and excreted in the urine, were confirmed by Diack and Lewis.[8]

RATIONALE AND INDICATIONS: Paraprol lends itself most effectively to the prophylaxis and treatment of industrial dermatitis.

The problem of preventing industrial dermatitis is one of removing all irritants from the pores of the skin. When irritation is present, it is very important to allay the itching.

The detergent action of Paraprol is that of a cleansing agent to emulsify and remove any grit, resins or other materials which may be on the hands and act as irritants. The itching so frequently associated with dermatitis is definitely allayed by Paraprol. The specially prepared demulcent base present in this preparation tends to form a protective coating over the applied areas, thus protecting underlying cells from stimuli resulting from contact with skin irritants.

The practice of using solvents or chemicals is contra-indicated because these tend to defat the skin leaving it chapped and cracked. Strong alkaline or abrasive soaps not only defat, but also destroy the protective layers of the skin. The latter act as a protection against external irritants and also tend to prevent access to bacteria to deeper layers of skin.

Paraprol supplies all of the fundamentals in the treatment of industrial dermatitis, which consist of thorough cleanliness, avoidance of irritants and the protection of exposed parts. The pH is adjusted so as to make it adaptable for general industrial as well as dermatological use.

Paraprol will act as a cell stimulant if any abrasions are present, and it will chemically debride any necrotic tissue if this is present. It thus affords protection, soothing and healing action, and a thorough cleansing effect, all in one formula.

Paraprol supplied by the Research Laboratories of The National Drug Company, Philadelphia, Pa.

MODE OF APPLICATION: The method of application was the same as that recently recommended by Parkes.[9] The patient was instructed to rub Paraprol over the hands, forearms and any other parts which might be affected, and allow it to infiltrate into the pores of the skin. The specially prepared base causes the formation of a protective film. Shortly before lunch, the patient again applies Paraprol, and by gradual wetting works up a lather which is washed off. Following lunch, Paraprol is again applied and the same procedure followed at quitting time as at the lunch period. It has been observed that a relatively small quantity of Paraprol is necessary at each application.

The cooperation of the patient was requested in all cases, and the dispensary nurses rendered important service in this investigation. Adequate washing facilities were provided to be assured that the above procedure was carried out.

OBSERVATIONS AND RESULTS: Paraprol was at first distributed to a small number of employees so that its prophylactic and therapeutic effects could be observed. It was found so effective that 300 employees exposed to either oils, grease, paints or lacquers were next chosen for this investigation herein reported.

It was reported that a higher degree of protection was afforded by Paraprol than any other preparation thus far used. The majority of employees showed a definite preference for Paraprol, and the number of repeat calls for this preparation was very unusual but most encouraging.

In those patients in whom comedones were present, Paraprol was definitely instrumental in cleansing the pores and removing the comedones. In this respect, the results obtained in this investigation confirm those of Parkes.[9] In a small number of employees in this group who had a rash with attendant itching, Paraprol was most effective. The itching was readily allayed and the rash in most instances disappeared in an average of one week. Thus far there have been no reports of nor have we observed any reactions to Paraprol.

SUMMARY: (1) Paraprol was employed in 300 employees as a prophylactic and therapeutic measure in industrial dermatitis.

2. It proved to be most effective as a prophylactic measure.

3. Therapeutically, it was found to be highly effective and safe.

4. No reactions to the use of Paraprol have been observed or reported.

5. The employees' opinions of high regard and their unusual cooperation seem to indicate that Paraprol is preferred by them to any other preparation thus far tried and used by us in industrial dermatitis.

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Silica Hazard in Arc Furnace Construction

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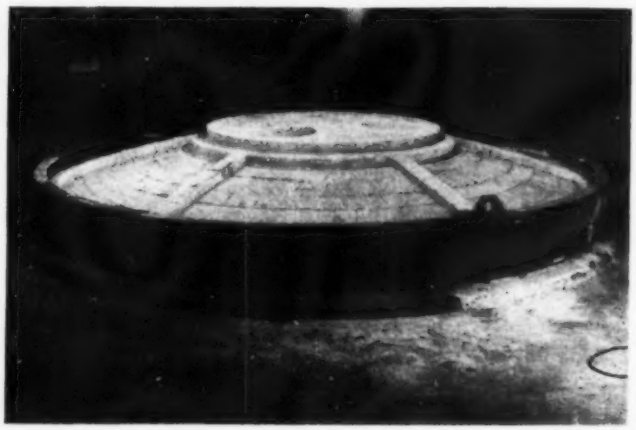
THE Timken Roller Bearing Company was the first to produce alloy steel in 70 and 100-ton electric furnaces. Before 1927 all electric furnaces produced a maximum of 25 tons of stainless or other grades of steel per heat. Since the start of World War II, the production of alloy steel in arc furnaces has tripled.

Industrial physicians responsible for the health of employees in the steel industry must be aware of the hazards present in the construction of arc furnaces used in producing electric furnace steels.

For some time now, The Timken Roller Bearing Company has used prefabricated block in the construction of arc furnaces used in the production of electric furnace steels. Not only does the use of prefabricated block greatly reduce the hazard of exposure to silica dust; but it also reduces construction and maintenance costs.

In the construction of the arc furnace roof it is necessary to use silica brick or block, the chemical composition of which is from 95 to 97% S_1O_2. Often silica block is required in the furnace above the slag line for the walls; and for complete construction of the roof, which is dome-shaped, and which varies in diameter size from 12 to 20 ft. For this purpose the silica brick or block is set on end, with circular openings for the electrodes in the upper third, and with a metal ring about the base. The furnace roof is constructed apart from the furnace and when completed is placed in position much as one would place a lid on a teapot.

Since the brick or block used in construction of these furnaces contains from 97 to 98% silica there is inevitably a hazard of exposure to silica dust in the operation. Bricklayers are employed to line the furnace and construct the roof, using either standard silica brick or silica block. For the 100-ton furnace, approximately 2,000 silica bricks are required to complete the roof. Each standard silica brick is 9 to 13 inches in length and approximately 4 inches square; and made in wedges, arches, and keys. In using brick to form this convex roof it requires four bricklayers working two days to complete the roof. In order to work out the circular openings for the electrodes as well as the convexity of the roof the bricklayer is required to place the silica brick on a knee pad or hold it in his hand, striking the brick with a scutch. Ninety per cent of the chipping is required in the fitting of the upper third of the roof.



Arc furnace roof at the Timken Roller Bearing Company

The sharpening of approximately three dozen scutch is required in the construction of a roof with silica brick.

The process of chipping the silica brick by the brickmason in order to form the convex roof of the furnace—as well as the circular openings for electrodes—causes at each chipping a small cloud of pure silica dust which precipitates around the working area as well as being inhaled by the bricklayer while he is chipping the silica brick.

Industrial physicians interested in industries using silica brick for any construction which requires the chipping of the brick should consider the idea of having the essential forms prefabricated with silica blocks in order to eliminate chipping of silica brick. Arc furnace roofs can be constructed with prefabricated block of from 12 to 14 inches in length, and varying in weight sizes up to 50 lbs. Laid up as one would a jig saw puzzle.

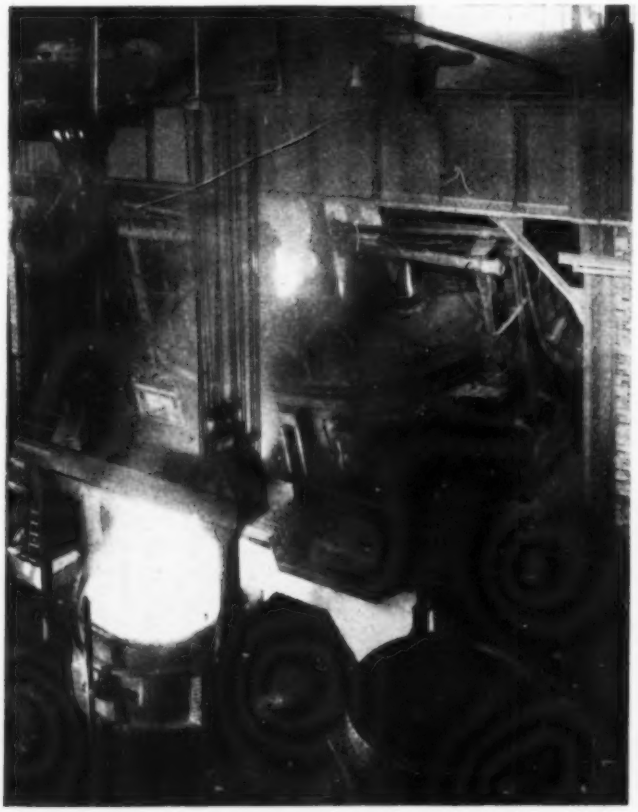
On the economic side, using prefabricated block, two bricklayers can complete in one day a roof which once required four bricklayers to work two days: and do it with practically no chipping. The proof is that by using silica block, it is very seldom necessary for the bricklayer to sharpen a scutch; thus eliminating any chipping and indirectly avoiding the exposure to silica dust always present in the standard silica brick method of arc furnace roof construction.

SUMMARY: (1) Ninety-five percent of the hazard of exposure to silica dust is eliminated by using prefabricated silica blocks for the construction of arc furnace roofs instead of silica brick which must be chipped to the proper size.

2. Less time is required in the construction of the roof.

3. Greater durability of the roof requires less frequent reconstruction.

4. Most important: the sure method of curing any disease is eliminating its cause.



Pouring steel from an arc furnace

Health Facilities in New Jersey Plants

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IN JANUARY, 1945, the Bureau of Industrial Health of the State of New Jersey Department of Health was asked to conduct a census of nurses in industry. While doing this, the opportunity was used to learn also the extent of basic health programs in plants of the state generally. To residents of New Jersey the results are significant because so far as is known they are the first of their kind to be published, and because they represent the industrial health picture during wartime conditions—conditions that will not be duplicated soon again. For industrial hygienists outside of New Jersey the findings may be useful for comparison with figures applying to their own states.

Manufacturing Establishments Studied

INFORMATION was gathered by writing to 1452 manufacturing establishments, and by interviewing personnel of a few of them. Where necessary, and where personal interviews could not be made, as many as five letters to some plants were written during the three-month period January to March, 1945. The return was higher than expected, for as shown in Table 1, over 90% of the plants replied. The tabulations were based on 1237 plants, or about 85% of the total initially written to.

TABLE 1.
RESPONSE TO LETTERS

	Plants	
	Number	Percent
TOTAL PLANTS WRITTEN TO	1452	100.0
Replies received	1317	90.6
Tabulated	1237	85.1
Not tabulated	80	5.5
Company out of business	37	
Duplications	30	
Replies received, but no data given	8	
Wrong address	2	
Discarded—not in manufacturing business	2	
Card returned by plant—but never received	1	
No replies received	135	9.4

The mailing list was made up of nearly every manufacturing plant in the state employing over 100 persons, and of a group of plants employing 100 persons or less selected because it was felt the nature of their occupational health exposures might have led them to employ physicians or nurses. The plants on which this report is based are listed in Table 2 according to nature of industry and size of plant. A total of 674,106 persons were employed in the 1237 plants studied. The largest groups of plants were in the iron and steel, chemical, and machinery (except electrical) industries —these three industries accounting for about 37% of the total. The largest groups of workers were employed in the transportation industry (which included ships, airplanes and other vehicles), the electrical machinery industry, and the chemical industry—these three industries accounting for over half the total workers.

As shown at the bottom of Table 2, nearly two-thirds of the plants studied employed 250 workers or less each, and only about one-tenth of all plants (117 plants in number) employed over 1000 workers each. In the latter group of plants, however, were nearly

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TABLE 2.
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES ACCORDING TO INDUSTRY CLASSIFICATION AND SIZE OF PLANT

	NUMBER		PERCENT	
	Plants	Employees	Plants	Employees
Industry classification (*Standard Industrial Classification*)				
ALL INDUSTRIES	1237	674,106	100.0	100.0
Food & kindred products	58	27,608	4.7	4.1
Tobacco manufactures	11	2,964	.9	.4
Textile mill products	109	30,905	8.8	4.6
Apparel & other finished products	99	20,261	8.2	3.0
Lumber & timber basic products	6	342	.5	.1
Furniture & finished lumber products	19	4,807	1.5	.7
Paper & allied products	44	11,956	3.5	1.8
Printing, publishing & allied industries	12	4,277	1.0	.6
Chemical & allied products	165	78,828	13.3	11.7
Products of petroleum & coal	18	15,293	1.5	2.3
Rubber products	27	15,795	2.2	2.3
Leather & leather products	20	3,624	1.6	.5
Stone, clay, & glass products	78	20,183	6.3	3.0
Iron & steel and their products (except machinery)	170	54,765	13.7	8.1
Nonferrous metals & their products	76	23,799	6.1	3.5
Electrical machinery	88	106,878	7.1	15.9
Machinery (except electrical)	120	54,981	9.7	8.2
Transportation equipment (including military)	50	175,782	4.0	26.1
Miscellaneous manufacturing industries	65	20,301	5.2	3.0
Industry classification not reported	2	757	.2	.1
Size group				
ALL GROUPS	1237	674,106	100.0	100.0
1- 100 employees	396	20,724	32.0	3.1
101- 250 "	405	66,733	32.7	9.9
251- 500 "	195	71,223	15.7	10.6
501-1000 "	118	83,082	9.7	12.3
1001-5000 "	98	210,186	7.9	31.2
5001 and over	19	222,158	1.5	32.9
Size not reported	6	—	.5	—

two-thirds of the total workers employed by all plants, while the smaller plants (those employing 250 workers or less apiece) accounted for 13% of all workers studied, or about one employee out of every eight. The bulk was thus concentrated in the larger plants.

Most of the plants indicated how many on their payrolls were men and how many were women. Only 21 plants of the total studied, 1237, did not give this information. As shown in Table 3 nearly all plants (excluding the 21 doubtful plants) employed both men and women. Most of the plants that employed only men were found in the smallest size groups. Table 3 also shows that about two-thirds of all workers employed by all the plants were men and one-third were women. It is interesting that this male-female ratio of 2:1 was roughly the same regardless of size of plant. Thus it cannot be said that the proportion of female workers was significantly higher or lower in either the larger plants or the smaller ones.

Was Study Representative of New Jersey Industries?

SINCE the mailing list was selective and not all-inclusive as to manufacturing plants of the state, an effort was made to determine what proportion of all plants and workers in the state this study covered. The State Unemployment Commission had available the number of employees under unemployment compensation, listed according to industry. These are known as "covered" employees, and they were estimated by the Commission to constitute 98 to 99% of the true total for manufacturing in the state. The most recent such list was for September, 1944. It is compared in Table 4 with the findings of this study.

TABLE 4.
BUREAU OF INDUSTRIAL HEALTH STUDY (JANUARY-MARCH, 1945) COMPARED WITH REPORT OF STATE OF NEW JERSEY UNEMPLOYMENT COMPENSATION COMMISSION (SEPTEMBER, 1944) AS REGARDS NUMBER OF WORKERS IN DIFFERENT INDUSTRIES

Industry classification	BIH study (Jan.-March 1945)	UCC report (Sept. 1944)[1]	BIH figures as percent of UCC figures
ALL INDUSTRIES	674,106	886,036	76
Transportation equipment (including military)	175,782	200,581	88
Iron, steel, nonferrous metals & their products and machinery (except electrical)	133,545	135,115	99
Electrical machinery	106,878	139,019	77
Chemical & allied products	78,828	107,003	74
Textile mill, apparel & other finished products	51,166	116,447	44
Food & kindred products	27,608	43,599	63
Stone, clay, and glass products	20,183	25,392	79
Paper, printing, publishing & allied products	16,233	27,640	59
Rubber products	15,795	15,285	(103)
Products of petroleum & coal	15,293	14,112	(108)
Lumber, furniture & lumber products	5,149	9,536	54
Leather and leather products	3,624	8,805	41
Tobacco manufactures	2,964	5,426	55
Miscellaneous manufacturing industries	21,058	38,076	55

[1]UCC figures are for "covered" employment—i. e., employment covered by the state unemployment compensation law. Covered plants have been estimated to include 98 to 99% of all manufacturing establishments.

TABLE 3.
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES ACCORDING TO SEX OF EMPLOYEE

Plant size group	TOTAL	Male-female breakdown not given	Male-female subtotal	Male	Female	(Percent of male-female subtotal) Male	Female
PLANTS							
ALL GROUPS	1237	21	1216	1216	1169	(100.0)	(100.0)
1- 100 employees	396	3	393	393	351	(100.0)	(89.4)
101- 250 "	405	6	399	399	395	(100.0)	(99.0)
251- 500 "	195	1	194	194	193	(100.0)	(99.5)
501-1000 "	118	2	116	116	116	(100.0)	(100.0)
1001-5000 "	98	1	97	97	97	(100.0)	(100.0)
5001 and over	19	2	17	17	17	(100.0)	(100.0)
Size not reported	6	6	—	—	—	—	—
EMPLOYEES							
ALL GROUPS	674,106	44,156	629,950	415,118	214,832	(65.9)	(34.1)
1- 100 employees	20,724	237	20,487	14,045	6,442	(68.6)	(31.4)
101- 250 "	66,733	850	65,883	41,340	24,543	(62.8)	(37.2)
251- 500 "	71,223	450	70,773	44,373	26,400	(62.7)	(37.3)
501-1000 "	83,082	1,476	81,606	53,269	28,337	(65.3)	(34.7)
1001-5000 "	210,186	1,733	208,453	133,786	74,667	(64.2)	(35.8)
5000 and over	222,158	39,410	182,748	128,305	54,443	(70.1)	(29.9)
Size not reported	—	—	—	—	—	—	—

TABLE 5.

BUREAU OF INDUSTRIAL HEALTH STUDY (JANUARY-MARCH, 1945) COMPARED WITH 1940 U. S. CENSUS (FOR NEW JERSEY) AS TO DISTRIBUTION OF PLANTS ACCORDING TO SIZE GROUP, TOGETHER WITH NUMBER OF WORKERS EMPLOYED IN EACH SIZE GROUP

Plant size group	NUMBER				PERCENT			
	Plants		Employees		Plants		Employees	
	B. I. H. (1945)	1940 Census	B. I. H. (1945)	1940 Census	B. I. H. (1945)	1940 Census	B. I. H. (1945)	1940 Census
ALL GROUPS	1237	7774	674,106	433,471	100.0	100.0	100.0	100.0
1- 100 employees	396	6890	20,724	125,567	32.0	88.7	3.1	29.0
101 and over	841	884	653,382	307,904	68.0	11.3	96.9	71.0
101- 250 employees	405	554	66,773	85,207	32.7	7.1	9.9	19.6
251- 500 "	195	200	71.223	67,711	15.7	2.6	10.6	15.6
501-1000 "	118	73	83,082	49,340	9.7	.9	12.2	11.4
1001-5000 "	98	n.d.*	210,186	n.d.	7.9	n.d.	31.2	n.d.
5001 and over	19	n.d.	222,158	n.d.	1.5	n.d.	33.0	n.d.
Size not reported	6	—	—	—	.5	—	—	—
1001 and over	117	57	432,344	105,646	9.4	.7	64.2	24.4

*N.D.—No data available.

Table 4 shows that the present study probably included three-fourths of all workers in manufacturing industries of the state. Certain industries, such as iron and steel, non-ferrous metals, machinery (excluding electrical), rubber, and petroleum, were all included; while in others—textile, apparel, and leather—the coverage was less than half.

The only available listing of plants according to their size was the 1940 U. S. Census of Manufactures (based on 1939 data). The present study was compared with this report in Table 5. The 1940 Census showed 6890 plants employing one to 100 workers apiece, while the present study covered only 396 plants in this size group, or only about 6% of the 1940 Census figures. However, for plants which employed 101 workers or more the present study evidently included a high proportion. The present study included more plants employing over 500 workers than existed at the time of the 1940 Census—showing an effect of wartime expansion.

Conclusion from these comparisons is that the present study was based on about three-fourths of all industrial *workers* in the state. Most of those persons not included worked in plants employing 100 or fewer people apiece. As to number of *plants* included, nearly all of those plants employing more than 100 persons each were covered, but of those plants employing 100 workers or less each, only a low percentage was included. Because data were so lacking for the latter group, and because medical and health facilities are known to depend on size of plant, tables in this report are broken down according to size of plant. There is good reason to believe that the 396 plants included here which employed one to 100 persons each did not represent the health situation for the several thousand plants in this size group that were not included, for nearly all the plants of this size that had any health program worth noting appeared in the 396.

Medical Personnel

THREE types of medical and nursing service are used by industry: full-time, part-time and on-call. A "full-time" physician or nurse is a regular full-time company employee. A "part-time" physician or nurse visits the plant at regular intervals regardless of whether treatments are needed by sick and injured workers or not, and for this service the plant pays a uniform monthly fee. The "on-call" physician or nurse is used only as need arises, and his services are usually only for treatment of injuries, on a per-case fee basis. An "adequate" health program, that is, one which is preventive in nature and aimed toward health maintenance—is seldom conducted unless the plant has a full-time or part-time doctor. In the following analysis, therefore, the on-call classification has been omitted on the assumption that a plant had either a full-time doctor, a part-time doctor (or nurse) —or none. While many plants reported they had on-call doctors, others left this space blank, indicating "no doctor." No valid distinction could be drawn between these replies, and so both were tabulated as "no doctor."

Table 6 shows that 176 plants out of 1237 had full-time or part-time doctors, while 364 plants had full-time or part-time nurses. Thus about 14% of the plants had an "adequate" physician service, and about 30% had adequate nurse service. These percents varied markedly with size of plant, being extremely low—practically negligible—for the smallest plants, and being 100% for the largest plants. Since the bulk of the workers studied were employed in the larger plants, and since a relatively large proportion of these plants had doctors and nurses, nearly 60% of all the workers studied had adequate physician service, and nearly 80% of all the workers had adequate nurse service.

Data (not shown) on which Table 6 was based revealed that the 176 plants listed employed a total of

TABLE 6.

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES WITH FULL-TIME OR PART-TIME DOCTOR AND NURSE SERVICE

Plant size group	TOTAL		Plants and employees with full-time or part-time doctor and nurse service.			
			Doctors		Nurses	
	Plants	Em-ployees	Plants	Em-ployees	Plants	Em-ployees
NUMBER						
ALL GROUPS	1237	674,106	176	402,025	364	533,540
1- 100 employees	396	20,724	2	137	4	293
101- 250 "	405	66,733	21	3,748	54	9,835
251- 500 "	195	71,223	33	12,538	102	38,688
501-1000 "	118	83,082	42	30,738	96	68,557
1001-5000 "	98	210,186	58	132,706	88	194,009
5001 and over	19	222,158	19	222,158	19	222,158
Size not reported	6	—	1	—	1	—
PERCENT						
ALL GROUPS	100.0	100.0	14.2	59.7	29.4	79.2
1- 100 employees	32.0	3.1	.5	.7	1.0	1.4
101- 250 "	32.7	9.9	5.2	5.6	13.3	14.5
251- 500 "	15.7	10.6	16.9	17.6	52.3	54.2
501-1000 "	9.7	12.3	35.6	36.9	81.3	82.5
1001-5000 "	7.9	31.2	59.2	62.9	89.8	92.3
5001 and over	1.5	32.9	100.0	100.0	100.0	100.0
Size not reported	.5	—	16.7	—	16.7	—

about 300 different doctors, 116 of them being full-time physicians and 184 part-time. Thus some plants employed several doctors apiece. Similarly the 364 plants listed in Table 6 as employing full-time or part-time nurses actually had the services of about 990 different individuals, 977 of whom were full-time and 13 part-time.

A further investigation was made of the professional qualifications of the plant nurses. A plant would report that it had a "nurse" if it had a person performing nursing duties, but it would not always differentiate between graduate nurses, graduate registered nurses, and non-graduates. Such a differentiation, however, is important. Table 7 shows that of the 977 individuals reported as carrying on full-time nursing duties, 779, or nearly 80%, were graduate nurses. About 5% were non-graduates, while for the balance, 15%, professional qualifications could not be determined. No doubt many of this group (145 individuals) were also graduate nurses.

TABLE 7.
PROFESSIONAL QUALIFICATIONS OF PERSONS REPORTED BY PLANTS AS PERFORMING PLANT NURSING DUTIES

Professional qualifications	NUMBER	PERCENT	
		Of total	Of those classified
ALL PERSONS REPORTED BY PLANTS	977	100.0	
Classified according to qualifications	832	85.2	100.0
Graduate nurses	779	79.8	93.6
Registered in New Jersey	597	61.2	
Registered, but not in New Jersey	157	16.1	
Not registered in any State	25	2.5	
Non-graduate nurses	53	5.4	6.4
Not classified (qualifications not determined)	145	14.8	

Table 6, and Tables 8, 9 and 10 following, assume that all individuals reported as performing nursing duties were in fact nurses. Some of them were not—but how many is not known. No correction could be made, consequently, before compiling these tables, and hence they represent an overstatement. From Table 7 it is known that of the 832 nursing personnel who could be classified, 53, or 6.4%, were not graduate nurses.

Table 6 shows that the percent of plants with adequate doctor and nurse service was low, and that those doctors and nurses who were employed were in the larger plants. The same data are rearranged in Table 8 and these findings are significant:

Two-thirds of all plants studied employed 250 persons apiece or fewer—and only about 3% of these plants had adequate doctor service. Somewhat over one-third of the balance of the plants (those employing

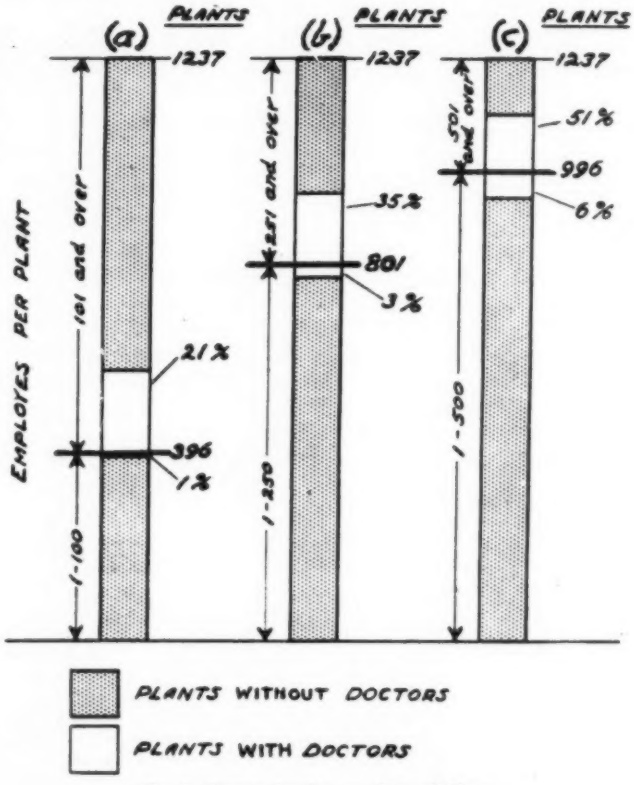


Fig. 1. Doctor Service vs. Size of Plant
Percent of plants with full-time or part-time doctors (that is, with "adequate" doctor service) among (a) plants employing one to 100 workers apiece as compared with plants employing 101 workers or more. Similar data are also shown for (b) plants employing one to 250 persons as compared with 251 or more each, and for (c) plants employing one to 500 persons as compared with plants employing 501 or more apiece

TABLE 8.
PERCENT OF PLANTS AND EMPLOYEES WITH FULL-TIME OR PART-TIME DOCTORS AND NURSES ACCORDING TO WHETHER PLANT IS (A) BELOW OR (B) ABOVE A SPECIFIED SIZE.

	Size group		Size group		Size group		Size group		
	(a) 1-100 employees	(b) 101 or more	(a) 1-250 employees	(b) 251 or more	(a) 1-500 employees	(b) 501 or more	(a) 1-1000 employees	(b) 1001 or more	All plants
PLANTS									
Percent in (a) and (b):									
WITH doctors	.5	20.7	2.9	35.3	5.6	50.7	8.8	65.8	14.2
WITHOUT doctors	99.5	79.3	97.1	64.7	94.4	49.3	91.2	34.2	85.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
WITH nurses	1.0	43.0	7.2	70.9	16.0	86.4	23.0	91.4	29.4
WITHOUT nurses	99.0	57.0	92.8	29.1	84.0	13.6	77.0	8.6	70.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Percent of all plants in (a) and (b):	32.2	67.8	65.1	34.9	80.9	19.1	90.5	9.5	100.0
EMPLOYEES									
Percent in (a) and (b):									
WITH doctors	.7	61.4	4.4	67.8	10.3	74.9	19.5	82.1	59.7
WITHOUT doctors	99.3	38.6	95.6	32.2	89.7	25.1	80.5	17.9	40.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
WITH nurses	1.4	81.6	11.6	89.1	30.8	94.1	48.6	96.5	79.2
WITHOUT nurses	98.6	18.4	88.4	10.9	69.2	5.9	51.4	3.5	20.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Percent of all employees in (a) and (b)	3.1	96.9	13.0	87.0	23.6	76.4	35.9	64.1	100.0

over 250 persons each) had adequate doctor service.

Four out of five plants studied employed 500 workers or less apiece. Only one out of 20 of these plants (5.6%), however, had adequate doctor service. Half of the larger plants (over 500 workers apiece) had adequate doctor service.

Nearly one-quarter of all employees studied worked in plants employing 500 persons or less apiece. Ninety percent of these people were *without* adequate doctor service. Seventy percent of them were *without* adequate nurse service.

Some of the information given in Table 8 has been charted in Fig. 1. The scarcity of adequate medical programs is brought out.

TABLE 9.
NUMBER AND PERCENT OF PLANTS EMPLOYING 101 PERSONS OR MORE APIECE THAT HAD FULL-TIME OR PART-TIME DOCTOR AND NURSE SERVICE, ACCORDING TO INDUSTRY

Industry classification	Plants employing 101 or more persons apiece				
	NUMBER of plants			PERCENT with	
	Total	With doctors	With nurses	Doctors	Nurses
ALL INDUSTRIES	833	172	357	21	43
Transportation (including military)	42	21	32	50	74
Electrical machinery	76	24	50	32	66
Chemical, petroleum & coal products	127	39	59	31	46
Food & kindred products	48	11	22	23	46
Iron, steel, nonferrous metals & their products & machinery (excluding electrical)	228	48	102	21	45
Stone, clay, & glass products	36	7	14	19	39
Paper, printing, publishing & allied products	43	6	13	14	30
Textile mill, apparel & other finished products	135	9	29	7	21
Other industries[1]	98	7	36	7	37

[1]These industries are: tobacco manufactures, lumber & timber basic products, furniture & finished lumber products, rubber products, leather & leather products, and miscellaneous manufacturing industries.

For a plant of a given size different industries are likely to furnish different health programs. This is in part because some industries have more occupational health hazards that require adequate medical supervision than others, and in part because some industries as a class are more progressive in their personnel and welfare activities than others. Other reasons are also present. Table 9 shows the proportion of plants in different industries that employed full-time or part-time doctors and nurses. Only plants that employed 10 workers or more apiece were included, because the coverage of the smaller plants in this study has already been shown to be incomplete (Table 5, above). The percent of plants with adequate doctor service varied from 50% in the transportation industry (many large plants) to 7% in the textile and apparel industry.

TABLE 10.
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES SERVICED BY FULL-TIME OR PART-TIME (A) DOCTOR ONLY, (B) NURSE ONLY, OR (C) DOCTOR AND NURSE

Type of medical service	NUMBER		PERCENT	
	Plants	Employees	Plants	Employees
ALL PLANTS	1237	674,106	100.0	100.0
With full- or part-time medical personnel	394	551,366	31.9	81.9
(a) Doctor ONLY (no nurse)	31	17,826	2.5	2.7
(b) Nurse ONLY (no doctor)	219	149,341	17.7	22.2
(c) Doctor and nurse	145	384,199	11.7	57.0
With neither full- nor part-time personnel	843	122,740	68.1	18.1

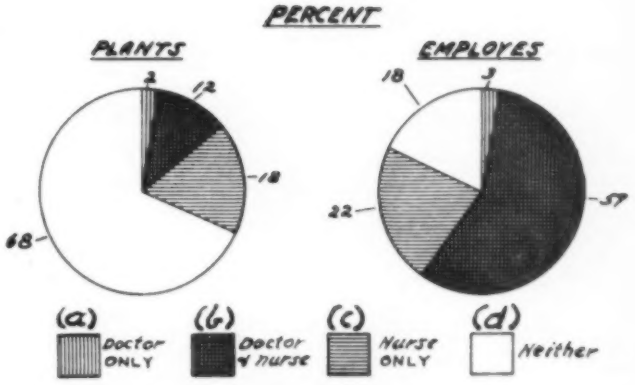


Fig. 2. Combinations of Doctor and Nurse Service
Percent of plants and employees served by (a) doctor only, (b) doctor and nurse, (c) nurse only

For adequate nursing service the corresponding figures were 74 and 21%, respectively. (Five industries unrelated to each other were included as "All others" in the table because none of them contained enough plants of over 100 employees apiece to be significant.)

Since there were more plants with nurses than with doctors, some of the plant nurses were evidently working without benefit of adequate medical supervision. Not all the plants with doctors, however, also had nurses. Table 10 and Fig. 2 show that 394 plants out of the total of 1237 had adequate doctor service *or* adequate nurse service *or* both. One hundred and forty-five plants had both doctor and nurse, 31 had doctor but no nurse, and 219 had nurse but no doctor. It is important from both the legal and personnel standpoints that nurses in each of the latter group of 219 plants be supplied with adequate standing orders by a physician.

Since these plants did not have full-time or part-time doctors, just who should supply the standing orders is not clear. No further investigation of this point was made, but Table 10 marks a definite deficiency in this matter.

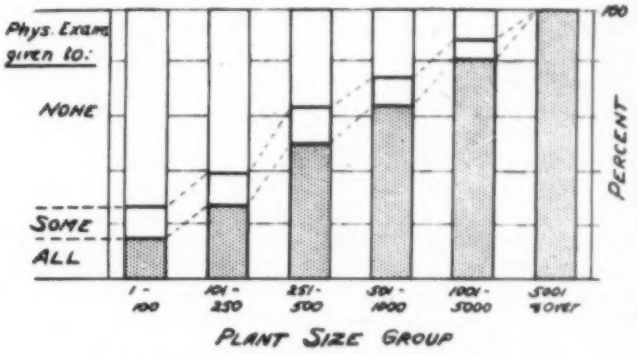


Fig. 3. Physical Examinations vs. Size of Plant
Percent of plants in various size groups that gave physical examinations to all employees, some employees, or none

Physical Examinations

EACH plant was asked whether it gave physical examinations to *all*, *some* or *no* employees. Table 11 and Fig. 3 summarize the replies. Somewhat more than one out of every three plants (35.6%) reported they gave physical examinations to *all* employees, about one out of eight plants gave them to *some* employees, and slightly over half the plants gave *no* physical examinations whatever.

The proportion of plants giving examinations to *all* employees varied six-fold, being low in plants of small size, and rising as the plant size increased.

TABLE 11.
NUMBER AND PERCENT OF PLANTS THAT GAVE PHYSICAL EXAMINATIONS TO ALL SOME OR NO EMPLOYEES, ACCORDING TO SIZE OF PLANT.

Plant size group	NUMBER of plants				PERCENT of plants			
		Phys. exams. given to				Phys. exams. given to		
		ALL	SOME	NO		ALL	SOME	NO
	Total	employees			Total	employees		
ALL GROUPS	1237	440	148	650	100.0	35.5	12.0	52.5
1- 100 employees	396	60	48	288	100.0	15.2	12.1	72.7
101- 250 "	405	108	51	246	100.0	26.7	12.6	60.7
251- 500 "	195	97	28	70	100.0	49.7	14.4	35.9
501-1000 "	118	76	12	30	100.0	64.4	10.2	25.4
1001-5000 "	98	79	8	11	100.0	80.6	8.2	11.2
5001 and over	19	19	0	0	100.0	100.0	0	0
Size not reported	6	1	0	5	100.0	16.7	0	83.3

Plant Dispensary Facilities

APPROXIMATELY two-thirds of all plants reported they had one or more rooms used as plant dispensaries. Plants having first-aid cabinets, but not reporting a first-aid room, were excluded from this tabulation. Table 12 shows that the prevalence of dispensaries depended on the size of the plant, rising from about two out of every five plants in the smallest size group to 100% in the largest size group. In the smaller size groups many more plants have dispensaries than have adequate doctor or nurse service. Most of these dispensaries must consequently be in charge of lay people, and they no doubt exist only for the treatment of industrial accidents of an emergency nature.

Plant Food Services

FOUR types of food service were reported: cafeteria, plant lunch counter, wagon (for transporting food through plant to workers), and dispensing machines. Many plants had various combinations of these services. As shown in Table 13, approximately half the plants studied had some food service, while the other half had none. The smaller the size of the plant the less likely it was to have some form of food service (see Fig. 4). In those plants that employed up to 250 workers apiece (these plants represented two-thirds of all plants studied) only about 38%, or less than two out of every five plants, had any food service at all.

Dispensing machines as a form of food service can scarcely be called even a bare minimum, for invariably the only items handled by them are soft drinks and candy. Often when wagons are used by themselves (with no lunch counter or cafeteria in the plant) they carry no more nutritive a diet. Consequently, if cafeterias and lunch counters are taken to represent the only adequate food services for plants, it can be said (from table 13) that 26.5% of all plants had adequate food services, and 73.5%—or nearly three-fourths of all plants—had inadequate or no food service. Of the size groups of plants employing 250 workers apiece or less—these groups numbering 801 plants and representing two-thirds of the total—only 98 plants, or less than one plant in every eight had adequate plant food service. Actually the proportion was probably less than this, for the measure of adequacy here has been taken as whether or not a plant had the mere physical facilities of a cafeteria or lunch counter, and the existence of these facilities in a plant does not necessarily mean that a well-balanced diet is offered to the employees.

The number of food services reported is given in Table 14. As already mentioned the total in this table is higher than in Table 13 because many plants had two or more services each.

TABLE 13.
NUMBER AND PERCENT OF PLANTS WITH FOOD SERVICES, ACCORDING TO TYPE OF SERVICE PROVIDED, FOR DIFFERENT PLANT SIZE GROUPS

Plant size group	Total plants	Plants with—					
		NO food service	Type of food service				
			Total	Cafeteria	Lunch counter (no cafeteria)	Wagon (no l. c. or cafeteria)	Dispensing machines ONLY
NUMBER							
ALL GROUPS	1237	604	633	257	70	45	261
1- 100 employees	396	285	111	20	12	7	72
101- 250 "	405	213	192	45	21	18	108
251- 500 "	195	66	129	49	21	9	50
501-1000 "	118	28	90	56	10	5	19
1001-5000 "	98	9	89	70	3	6	10
5000 and over	19	0	19	16	3	0	0
Size not reported	6	3	3	1	0	0	2
PERCENT							
ALL GROUPS	100.0	48.8	51.2	20.8	5.7	3.6	21.1
1- 100 employees	100.0	72.0	28.0	5.0	3.0	1.8	18.2
101- 250 "	100.0	52.6	47.4	11.1	5.2	4.4	26.7
251- 500 "	100.0	33.8	66.2	25.1	10.8	4.6	25.7
501-1000 "	100.0	23.8	76.2	47.4	8.5	4.2	16.1
1001-5000 "	100.0	9.2	90.8	71.4	3.1	6.1	10.2
5000 and over	100.0	0	100.0	84.2	15.8	0	0
Size not reported	100.0	50.0	50.0	16.7	0	0	33.3

TABLE 12.
NUMBER OF PLANTS HAVING DISPENSARIES OF DIFFERENT SIZE, ACCORDING TO NUMBERS OF EMPLOYEES IN PLANT

Plant size group	Total	Plant dispensary facilities						
		No. plants with different size disp.						Plants with NO dispensaries
		Total	(Percent)	1 room	2 rooms	3 rooms	4 or more	
ALL GROUPS	1237	805	(65.0)	545	108	57	95	432
1- 100 employees	396	156	(39.4)	147	6	3	—	240
101- 250 "	405	257	(63.5)	231	19	5	2	148
251- 500 "	195	174	(89.3)	112	35	17	10	21
501-1000 "	118	107	(90.6)	44	33	15	15	11
1001-5000 "	98	90	(91.8)	10	14	15	51	8
5000 and over	19	19	(100.0)	—	1	1	17	0
Size not reported	6	2	(33.3)	1	—	1	—	4

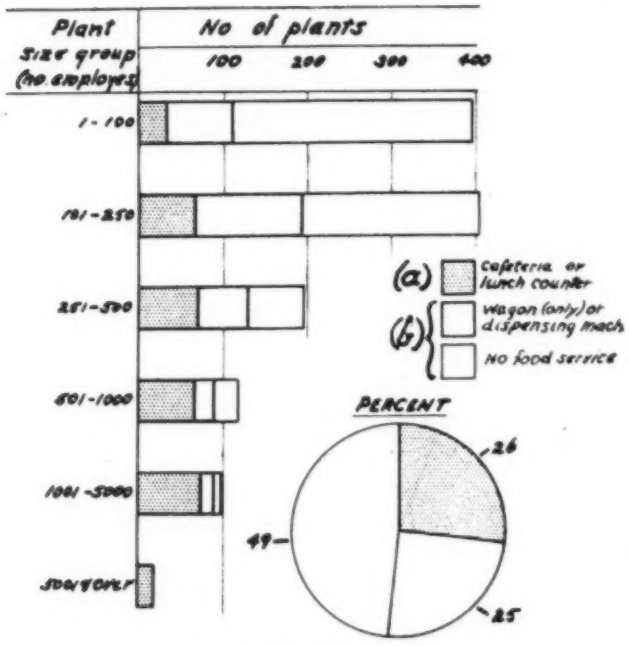


Fig. 4. Plant Food Service
Number of plants according to size group, together with percent of total plants, that provided various types of in-plant food service: (a) "adequate" food service—cafeterias or lunch counters; and (b) "inadequate" food service—wagons (no cafeteria or lunch counter), dispensing machines, or no food service

TABLE 14.
NUMBER OF FOOD SERVICES PROVIDED (IN 1237 PLANTS)

Type of food service	Number of plants
ALL TYPES	883
Cafeterias	257
Lunch counters	118
Wagons	97
Dispensing machines	411

Comparison with other States

IN 1943 Joseph Shilen* reported on industrial medical facilities in an adjoining state, Pennsylvania. While the material gathered there was similar in some of its features to that reported here, direct comparisons can be made only for the few items that were tabulated in the Pennsylvania report according to plant size groups. The Pennsylvania report included a much higher proportion of plants employing 1 to 100 workers than the present report does. Plant health facilities vary markedly with size of plant, and for comparisons to be valid they must be made for specific size groups. Furthermore, the dates of the two studies do not coincide, and industrial conditions may have changed in the interim. The following comparison is made, however, for what interest it may hold.

Table 15 compares the percent of plants reporting full-time or part-time doctors and nurses in the Pennsylvania survey with the percent for the present New Jersey study. Excluding figures for the smallest plant size group—and hence excluding figures for the total, since these are strongly influenced by the smallest size group—in the case of doctors, remarkable agreement is shown for the other plant size groups. In the case of nurses, similar agreement is not found except for the largest size group—plants employing over 1000 persons.

The right hand column of Table 15 gives the ratio of percent of plants having doctors and nurses in New Jersey to the similar percent for Pennsylvania.

*SHILEN, JOSEPH: Industrial Medical Facilities in Pennsylvania. INDUSTRIAL MEDICINE, 12, p. 379 (June) 1943.

TABLE 15.
COMPARISON OF NEW JERSEY AND PENNSYLVANIA (1943) FIGURES SHOWING PERCENT OF PLANTS HAVING FULL-TIME OR PART-TIME DOCTOR AND NURSE SERVICE, ACCORDING TO SIZE OF PLANT

Plant size group	Plants with full-time or part-time medical personnel: NUMBER (Penna.)[1] Total	NUMBER (Penna.)[1] With full- or part-time personnel	PERCENT Penn-sylvania	PERCENT New Jersey[2]	RATIO N.J./Pa.
DOCTORS					
ALL GROUPS	3086	243	7.9	14.2	1.8
1- 100 employees	1717	30	1.8	.5	.3
101- 250 "	800	42	5.3	5.2	1.0
251- 500 "	320	48	15.0	16.9	1.1
501-1000 "	143	47	32.9	35.6	1.1
1001 and over	106	76	71.6	65.8	.9
NURSES					
ALL GROUPS	3086	309	9.7	29.4	3.0
1- 100 employees	1717	19	1.1	1.0	.9
101- 250 "	800	53	6.6	13.3	2.0
251- 500 "	320	68	21.2	52.3	2.5
501-1000 "	143	67	46.8	81.3	1.7
1001 and over	106	93	87.7	91.2	1.0

[1]SHILEN, JOSEPH: Industrial Medical Facilities in Pennsylvania. INDUSTRIAL MEDICINE, 12, p. 379 (June) 1943.
[2]From Table 6 of this report.

Comments and Conclusions

STATUS OF INDUSTRIAL HEALTH PROGRAMS: This report gives a snapshot picture of certain basic health programs in New Jersey plants. It is believed reliable as to plant coverage for plants that employed 101 or more persons apiece. The group of plants studied that employed one to 100 workers each, represented only a small sample (possibly only 6%) of the total plants in the state in this size group.

Presumably as time goes on more and more plants are engaging in plant health activities—but whether the results given here mark an improvement of great or slight proportions cannot be told, since comparative data for an earlier period are not available. However, the facts that only one plant out of every five employing 101 persons or more, and only one-half of all plants studied that employed 501 persons or more had adequate doctor service, do not appear impressive. Similarly the facts that among plants employing 101 workers or more apiece, 54% did not offer physical examinations for proper employee placement and health improvement, and 65% did not have adequate plant food service, and nearly half (43%) were without a nurse, show that many plants have not adopted the comprehensive industrial hygiene programs that are currently being advocated.

Perhaps these and other figures represent a great improvement over conditions a few years back; possibly the future will show continued advances. Fortunately, from the worker's standpoint, because of the concentration of employees in the larger plants, a sizeable percentage of workers—if not of plants—are receiving health services. Thus in plants that employed 101 workers or more each, while about four-fifths of the plants had no adequate doctor service, only two-fifths of the employees in this group of plants were without doctor service.

One thing is certain—these findings do not necessarily represent recommended or ideal plant health programs. They should not be used as guides to follow (although each group had many individual plants whose programs were outstanding). These findings merely represent, within the limits of error, what current plant health practices were at the time of the study.

COMPARISON STUDIES: From time to time organizations in various states carry on investigations of this kind to examine what progress is being made in plant health and hygiene. If one state could compare itself with another, yardsticks could be set up by which groups responsible for the promotion of industrial hygiene could tell where to concentrate their activities.

Too often, however, results in different states or other areas are not comparable. This is usually because it is necessary to study *samples* of all the plants in the state rather than *every* plant. The latter would be a prodigious if not impossible task. Often—as was the case with this study—many small plants are not included, although coverage of the large plants may be nearly complete. Since the small plants are relatively great in number and hence influence the total figures strongly, their exclusion distorts the total, and makes the results of little value for purposes of comparison with other studies. However, if all analyses are made according to standard plant size groups, and if it can be shown—as is usually likely—that in certain size groups nearly all plants were surveyed, then with these particular size groups other investigators could make some valuable comparisons.

Summary

AN INVESTIGATION was made during January-March, 1945, to learn the extent of certain basic plant health programs in a group of 1237 New Jersey manufacturing establishments, employing 674,106 workers. The study was conducted for the most part by mail—90% of the plants replying to letters sent out. The plants studied included nearly all the plants in the state that employed 101 or more workers. For plants employing one to 100 persons, the coverage was low. The number of workers studied was about three-fourths of all industrial workers in the state. Information was obtained on the following:

1. Plant doctor service—full-time, part-time, or none.
2. Plant nurse service—full-time, part-time, or none.
3. Plant dispensary—number of rooms.
4. Physical examinations—given to all, some or no employees.
5. Plant food service—type.

Results were analyzed according to size of plant, and, in some instances, according to industry.

While many plants were found to have outstanding health programs, for the various groups as a whole marked deficiencies were noted. In general all health services improved and became more extensive as size of plant increased. This points out the necessity for analyzing data in future studies of this type according to size of plant—so results of different studies may be compared with each other.

Warning is made that findings in this report are not to be regarded as a guide for use in setting up plant health programs. They are not the ideal program. They are of value principally in pointing out to official and non-official agencies interested in industrial hygiene in New Jersey that much promotional work in the field is still needed, and that new technics should be applied for bringing recognized plant health programs to industrial workers.

DR. PILGRIM

NOW concerned with an industrial dermatoses problem in which there are many facets lacking, and much impressed with the similarity of industrial dermatoses problems and mystery tales; one needs become some manner of detective in working out the evidence not apparent in the medical picture. . . . AND attending the meeting of CENTRAL STATES SOCIETY OF INDUSTRIAL MEDICINE AND SURGERY, with the morning clinics at St. Luke's Hospital, where did much enjoy the pathological conference conducted by DR. EDWIN F. HIRSCH, and the case demonstrations and papers by DRS. HAROLD STEINBERG, WILLIAM BAKER, MATHEW KYLIE, HARRY MOCK, WILL LYON, and others, and, in the afternoon session, the most excellent papers by DRS. URBAN E. GEBHARD, EDWIN W. RYERSON, L. F. WEBER, CAPT. CHARLES E. STEBBINS, E. A. IRVIN, and M. H. KRONENBERG, the sum of which was a very satisfactory series of case demonstrations and conclusions toward advancing the cause of industrial medicine and surgery, and wherefor many thanks to the Program Chairman, DR. ROBERT M. GRAHAM, and the President of the Society, DR. H. W. WELLMERLING; and sitting with the Board of Directors of the Society, as usual, between afternoon and evening sessions, and noting that the Society has had a very steady growth, being now the largest of the component societies of the AAIP&S. . . . AND with the Board of Directors of AAIP&S in afternoon and evening meeting, planning for the Annual Conference on Industrial Health at Chicago, April 8-13, 1946, where many ideas were suggested for the program as to subjects and speakers—good auguries for the meeting. . . . AND concerned with reports and manuscripts, and relative to matters of publicity for coming meetings, and various talks and lectures to be given in early '46. . . . AND then to Wisconsin on an important case involving alleged tuberculosis in an industrial employee, which proved to be an ordinary type of tuberculosis contracted outside of employment and without relationship to occupation; there meeting my longtime friend, OSCAR SANDER, with whom was much pleasant converse, technical and non-technical. . . . AND thereafter to Beloit, Wisconsin, speaking before the Rock County Medical Society on "Scope, Present Status and Future Possibilities of Industrial Medicine." And inspecting the Fairbanks, Morse plant, and noting the great improvements during the past 10 years; and discussing things nonclinical and clinical with DRS. CARNEY, MUNN, SNODGRASS, MCDONALD and ALLEN. . . . AND again at the office where much occupied with editing proceedings of the Industrial Hygiene Foundation annual meeting and other manuscripts and papers. . . . WHENCE to Birmingham, Michigan, for the holidays with brother Byron and his family, and reading a mystery story enroute, and arriving one and a half hours late, as is the custom; and with the family for the annual Christmas party of the Village Players presenting their 23rd event in which the players were starred in "Junior Miss" and "A Dash of Dubonnet," an original musical, in the latter the acting being excellent, with the music somewhat monotonous, albeit not greatly differing therein from any musicals of professional scale now current; and much playing of records, including Franck's D Minor Symphony, selections from Carousel, Beethoven and Bach, followed by piano playing with sister Olga; and helping the children set up the Christmas tree and all having gifts around the tree on Christmas morning; and reading meanwhile Ullman's "The White Tower," an excellent description of mountaineering, but leaving PILGRIM rather depressed. . . . AND visiting DR. E. A. IRVIN and seeing his new and excellent set-up of medical department at Cadillac Motor Division of General Motors. . . . AND back at the desk and laboratory, needing orientation, which discovered took several days. And concerned with the preparation of material on medical care plans and with a proposed Industrial Hygiene Code for the State of Ohio, both of which occupied much time and thought—the latter in particular as to the medicolegal implications of embracing standards for permissible concentrations of atmospheric contaminants in the code content. . . . AND preparing for trips into Wisconsin, and to New York City, and New Orleans, of which later.

Leading the panel discussion on "Putting the Disabled Veteran Back to Work," conducted during the two-day Tenth Annual Meeting of the Industrial Hygiene Foundation at the Mellon Institute, Pittsburgh, is Colonel John N. Andrews, Officer in Charge of Postwar Activities, Selective Service System (right). Major General Paul R. Hawley, Acting Surgeon General, Veterans Administration (left), was one of the principal participants. The others were Michael Supa, Supervisor of Physically Handicapped Personnel, International Business Machines Corporation, who, as a blind man, overcame his own handicap to attain his present important position, and Dr. H. A. Vonachen, Medical Director, Caterpillar Tractor Company, noted for his leadership in veteran rehabilitation

Industrial Hygiene Conference

—Proceedings of the Tenth Annual Meeting of the Industrial Hygiene Foundation, Mellon Institute, Pittsburgh, November 14-15, 1945—

Reported by

C. O. SAPPINGTON, M.D., Dr. P.H.

A WEALTH of practical material was presented under four general headings at the tenth annual meeting:

1. Putting the Disabled Veteran Back to Work, III, (being a continuation of the panel discussion at the 1943 and 1944 meetings).
2. Medical and Engineering Sections.
3. Legal Section.
4. Management Section.

The annual meeting was preceded by a round table engineering conference on November 13, devoted to an informal discussion of dust control problems and industrial ventilation. The session was restricted to plant engineers from member companies, 55 of whom sent representatives. This engineering conference was such a success that it was voted to have another next year.

Two unusual features of the meeting were the Navy's presentation to the Foundation of its recently created Certificate of Achievement. This was presented by CAPTAIN ERNEST W. BROWN (MC) Director of Industrial Hygiene Research, Bureau of Medicine and Surgery, Navy Department. This is one of the earliest of the awards which are given for production achievement or services rendered; the Foundation received the award on the latter basis. In a letter of notification respecting the award, addressed to JOHN F. MCMAHON, Managing Director, the Navy stated: "This certificate signalizes the Navy's recognition of the splendid efforts put forth by the staff of your organization in support of the war production program. The Navy desires to express its sincere appreciation and thanks to you and your staff." At the presentation, CAPTAIN BROWN paid particular tribute to the work of the members of the Foundation's staff in the conduct of surveys of war plants for the maintenance of healthful working conditions, and for the preparation of the monthly "Industrial Hygiene Digest."

Another feature of the meeting was the announcement of the appointment of LT. COL. HATCH to the Foundation Staff. COL. HATCH recently returned from the Pacific Theatre and was discharged from the Army where his duties included the ventilation of tanks and research regarding this work. He was attached to the Armored Medical Research Laboratory, Fort Knox, Kentucky, as Executive Officer, and was primarily concerned with physiological and engineering problems involved in adapting men to the machines of war. COL. HATCH has had long experience in the field of industrial hygiene, having formerly been Associate Professor of Industrial Hygiene, School of Medicine, University of Pennsylvania; Dust Control Engineer for the New York State Department of Labor; and earlier, Sanitary Engineer for the Tennessee State Department of Public Health, as well as formerly being instructor in industrial hygiene at Harvard.

Wednesday Morning

JOHN F. MCMAHON, Managing Director of the Foundation, gave the opening address "The Foundation—Forward in Peace."

The Foundation, called Air Hygiene Foundation 10 years ago, was incorporated on November 23, 1935. The name was changed to Industrial Hygiene Foundation in 1941, to describe the expanding scope of the organization's activities. The first meeting of the members—there were then 22—was held in 1936. Today there are almost 300 member companies and associations. In addition, 80 Federal and state agencies, universities and other non-industrial groups subscribe to Foundation publications.

The Foundation's financial position has further improved during the past year. The funds will be used to increase the Foundation's services to its member companies to the end of helping protect the health of workers. Thirteen companies and associations have joined the Foundation thus far in 1945.

In peace, as in war, the Foundation's foremost service to its member companies, and to industry generally, is the conduct of plant surveys for the maintenance of healthful working conditions. More than 56 such surveys were made for member and non-member companies during the past year, and 11 are now in progress. Surveys were made in

plants in 15 states, scattered from New York to Texas and California.

Despite personnel and paper shortages, the staff continued to prepare and issue the *Industrial Hygiene Digest* each month. The *Digest* covers currently important literature, news and legal developments in the industrial health field. Exactly 1,204 separate items have been carried thus far in 1945, with the November and December issues yet to be published.

Other publications of the year included the *Transactions* of the last annual meeting. This was issued in five separate parts. A new bulletin in the Engineering Series is in manuscript form and will be issued in 1946.

The Foundation continued to help support the investigations of DR. L. U. GARDNER on industrial dust diseases at the Saranac Laboratories.

On a grant from the Foundation, DR. C. O. SAPPINGTON, of Chicago is engaged in a field survey of Industrial Health Departments, their Functions and Relationships. Another Foundation-supported study, being conducted by DR. EDWARD J. STIEGLITZ, of Washington, deals with health conservation in industry, including supervisory personnel.

The creation of this organization 10 years ago, and its constant progress since, the steady growth of Divisions of Industrial Hygiene which are now established in most of the states, the institution of industrial health courses in more medical schools, (Yale, Jefferson, and Wayne have all announced such courses recently, while the University of Pittsburgh is launching a post-graduate course in industrial medicine), the authorization of a new periodical by the American Medical Association to be called *Occupational Medicine*, which DR. FISHBEIN advises will appear "about the middle or toward the end of January"—these and many other factors, are tangible indicators of the expanding role of health in industry.

GIVING the keynote address, MAJOR-GENERAL LEWIS B. HERSHEY, Director, Selective Service System, spoke on "Industry Needs the Veteran."

Industry need not regard its relationship with the returning veteran only as a duty, but also as an opportunity; an opportunity to use the veteran's fitness, training, and eagerness to participate in American production.

Veterans are young, the great majority of them in their teens and early twenties. They are well above the average in physical fitness, because selection required fitness, and the veterans' life in the armed forces has increased their physical development. They learned regular habits of cleanliness and personal hygiene, to be alert and to care for their bodies. They have been given the best medical and dental care. They know the importance of using proper equipment and of exercising due caution in hazardous operations.

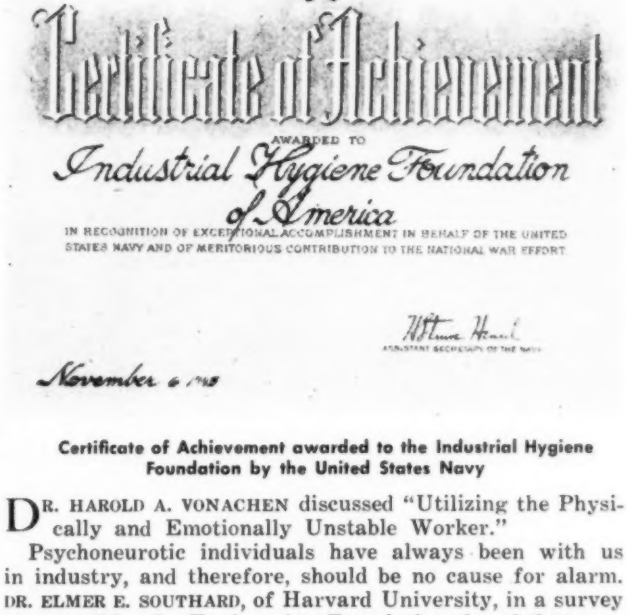
This was a mechanized war. The services have trained thousands of men to work with machines, to operate them and to repair them. Many skills learned in the services can be used in industry.

To the veteran, readjustment means a good job. And a good job means one that will challenge the man's capacities, give him a sense of participation in vital and constructive work. The veteran is an adult. He learned the hard way; he is alive now because he could learn. He was not accustomed to quit a job because he didn't like it or because he didn't like the methods of those in charge.

The physically handicapped veteran offers a special opportunity. He has made a large payment on a share in America's future. We owe him the chance to make that share mean something significant, to put his abilities into vital, constructive work.

Industry has been very cooperative in helping to absorb and adjust veterans, and there are many evidences that this same spirit of cooperation will continue. Also there are evidences that the veterans will continue to prove their superior qualities as workers, and as citizens.

IN THE absence of DR. C. D. SELBY, COL. JOHN N. ANDREWS presided at the panel discussion on "Putting the Disabled Veteran Back to Work, III," which was a continuation of the panels held in 1943 and 1944.


UNITED STATES NAVY

Certificate of Achievement

AWARDED TO

Industrial Hygiene Foundation of America

IN RECOGNITION OF EXCEPTIONAL ACCOMPLISHMENT IN BEHALF OF THE UNITED STATES NAVY AND OF MERITORIOUS CONTRIBUTION TO THE NATIONAL WAR EFFORT

November 6 1945

Certificate of Achievement awarded to the Industrial Hygiene Foundation by the United States Navy

DR. HAROLD A. VONACHEN discussed "Utilizing the Physically and Emotionally Unstable Worker."

Psychoneurotic individuals have always been with us in industry, and therefore, should be no cause for alarm. DR. ELMER E. SOUTHARD, of Harvard University, in a survey sponsored by the Engineering Foundation, found that over 60% of discharges by industry are not due to the inability of employees to do their jobs, but to the physical and emotional environment in which they are expected by industry to work. A large majority of our citizens cannot readily adjust themselves to every new environment or situation to which life exposes them, and the same is just as true of the man in our armed forces. However, it should be re-emphasized that this does not mean that these nervous individuals are not employable. On the contrary, in a study of a large number of soldiers discharged for psychoneurosis, 85% were holding full-time jobs six months following discharge. Furthermore, the soldiers discharged for neuropsychiatric reasons may perform their duties in industry with far greater efficiency and enthusiasm than so-called "normal" employees.

Each veteran being assigned to a new job was given a neuropsychiatric interview in order to determine what psychopathology, if any, was present that might interfere with successful adjustment while on the job. A veteran was considered normal if no persistent or recurrent neuro-

Captain Ernest W. Brown (MC) USN, head of Industrial Hygiene Research, Bureau of Medicine and Surgery, presents the Navy's Certificate of Achievement to the Industrial Hygiene Foundation. The award is being received by John M. McMahon, the Foundation's Managing Director

psychiatric symptoms existed. Occasional worries, fears or irritable moments which might be considered justifiable for a particular situation were not considered significant. For example, an individual might be anxious or worried before an examination or during an employment interview, but this could be discounted as being unimportant.

A veteran was classified mild if some minor symptom such as worrisomeness or concern about family or job caused temporary anxiety. Also included in this group were veterans who occasionally complained of mild headaches or mild gastro-intestinal symptoms. However, none of these symptoms would cause any great suffering or prevent the individual from working at maximum efficiency.

A veteran was considered moderate if definite symptoms such as recurrent headaches, gastro-intestinal disturbances, phobias, anxiety attacks, or nightmares were prevalent. However, to be included in this category none of these symptoms could cause very serious suffering or lead to even temporary impairment of work efficiency. Thus, individuals in this classification could be hired with the only proviso that proper placement and some understanding from supervision be extended.

A veteran was considered as suffering from a severe neuropsychiatric condition if any of the above symptoms existed to a severe degree. Thus, severe headaches once a week or gastro-intestinal symptoms once a week where such complaints would interfere with work efficiency would be included in this classification. All veterans with psychotic states such as schizophrenia, manic-depressive or constitutional psychopathic inferiority and conditions such as delusions, hallucinations and ideas of persecution, or extreme psychoneurotic states where continuous work would be impossible would also be included in this classification.

The problem of placing the veteran in industry requires that each case be handled individually. Therefore, all factors pertaining to health, ability, training, personality and specific injury sustained must be known and evaluated, taking into consideration physical capabilities as well as limitations. The techniques of psychological testing can be used in determining the veteran's emotional status which is an index for proper placement. At "Caterpillar," a great deal of success has been achieved with the introduction of an extensive psychological testing program, one phase of which ascertains an individual's emotional stability. Industry's use of the above factors will enable the veteran to become a self-sustaining member of society for the remainder of his productive life.

This program must also have the earnest support and sympathetic assurance of top management. "Caterpillar's" program had such support and assurance, and those concerned with it were able to draw upon many years of experience in the placement of other handicapped employees already on the job; by knowing what had been done in pre-war years in placing various types of handicapped persons, they were better able to cope with the problem of the returning veteran. This, of course, necessitated a job analysis, with emphasis on the physical and emotional activities demanded of the individual, as well as work requirements. In addition, the potential or actual hazards were evaluated and appraised for specific jobs or work areas. This analysis involved the cooperation of the safety, personnel, medical and training divisions, as well as factory supervision. The types of jobs in the plant for individuals both with physical and with emotional disabilities thus became known.

War has a tendency to modify human activity and behavior. The fears, the tensions, and the anxieties experienced by military personnel are normal reactions and the neuropsychiatric and psychosomatic disturbances that develop are to be expected in some instances. Therefore, when these disturbances do occur, there should be no undue apprehensiveness. On the contrary, reassurance, understanding and intelligent procedures will be more effective. For the veteran, the task is—readjustment; for industry —understanding!

MR. MICHAEL SUPA, in discussing "Utilizing the Blind Worker," stated that in most states throughout our country, people who have less than one-tenth of normal vision are classified as blind. The blind of our country consist, then, of those whose visual defect may range from a complete lack of vision to an amount no greater than 10% of normal vision.

The condition of blindness can be more clearly understood if we recognize the two major elements that comprise it. These elements are the *disability* of blindness and the *handicap* of blindness. Our thinking is greatly facilitated when we differentiate between the *disability* and the *handicap*.

The disability is the physical aspect of blindness. It represents the type and degree of physical impairment. It can be measured, and in most instances quite accurately described. The handicap of blindness differs from the physical disability in that it consists of the many disadvantages that arise as a direct result of the disability. The disadvantages may be social, psychological, economic and vocational. These disadvantages may be modified by the individual's aptitudes, capacities, training, education and previous work experience.

To demonstrate the varying effects that may accompany a similar disability, an illustration was selected from among the minor physical defects. Let us suppose

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Wednesday—November 14

THE FOUNDATION—Forward in Peace"—JOHN F. MCMAHON, Managing Director.

"Industry Needs the Veteran" (Keynote Address)—MAJOR-GENERAL LEWIS B. HERSHEY, Director, Selective Service System.

PUTTING the Disabled Veteran Back to Work, III: Presiding—C. D. SELBY, M.D., Medical Consultant, General Motors Corporation; Member, Foundation's Board of Trustees and Medical Committee.

"Utilizing the Physically and Emotionally Unstable Worker"—H. A. VONACHEN, M.D., Medical Director, Caterpillar Tractor Company.

"Utilizing the Blind Worker"—MICHAEL SUPA, Supervisor, Physically Handicapped Personnel, International Business Machines Corporation.

"Activities of the Veterans' Administration"—MAJOR-GENERAL PAUL R. HAWLEY, Acting Surgeon General, Veterans' Administration.

"Comments on Case History Successes and Failures (Discussion)—COLONEL JOHN N. ANDREWS, Officer in Charge of Postwar Activities, Selective Service System.

MEDICAL and Engineering Sections: Presiding—A. J. LANZA, M.D., Associate Medical Director, Metropolitan Life Insurance Company; Member, Foundation's Board of Trustees and Chairman, Medical Committee, and PHILIP DRINKER, Sc. D., Harvard School of Public Health; Member, Foundation's Board of Trustees and Chairman, Preventive Engineering Committee.

"Industrial Health Department Functions and Relationships" (Preliminary report on a Foundation field study now in progress)—C. O. SAPPINGTON, M.D., DR. P.H., Industrial Health Consultant. Discussion—T. LYLE HAZLETT, M.D., Medical Director, Westinghouse Electric Corporation.

"Accurate Diagnosis of Silicosis—Possible Sources of Error"—L. U. GARDNER, M.D., Director, The Saranac Laboratory; A. G. CRANCH, M.D., Industrial Toxicology Department, Union Carbide and Carbon Corporation; L. E. HAMLIN, M.D., Medical Director, American Brake Shoe Company; O. A. SANDER, M.D., Member, Foundation's Medical Committee.

"Accurate Measurement of Silicosis Hazards —Newer Methods"—F. R. HOLDEN, PH. D., and E. C. HYATT, Industrial Hygiene Foundation.

"Controlling Industrial Health Hazards" (Foundation Plant Surveys in 1945)—W. C. L. HEMEON, M.S., Industrial Hygiene Foundation.

Thursday—November 15

LEGAL Section: Presiding — THEODORE C. WATERS, Mullikin, Stockbridge and Waters; Member, Foundation's Board of Trustees and Chairman, Foundation's Legal Committee.

"Legal Developments of 1945 Respecting Industrial Health"—THEODORE C. WATERS.

"Canada and Compensation" — IVAN SABOURIN, Member, Foundation's Legal Committee.

"Health Insurance to Compensate for Wage Loss"—ALBERT PIKE, JR., Assistant Actuary, Life Insurance Association of America.

MANAGEMENT Section: Presiding—V. P. AHEARN, Chairman, Industry Members, National War Labor Board; Member, Foundation's Board of Trustees.

"Better Working Conditions—Better Work" —ALEX W. DANN, Executive Vice-President, Dravo Corporation.

"Putting Sick Abenteeism Data to Work" (A.T.S.C. Civil Service Employees—1945)—MAJOR JOHN M. STOCKTON, SN. C., Director, Industrial Health Education, Headquarters, Air Technical Service Command, Wright Field.

"Role of the Purchasing Department in Industrial Health Maintenance"—ANDREW H. PHELPS, Vice-President in Charge of Purchasing, Westinghouse Electric Corporation.

"Role of the Foreman in Industrial Health Maintenance"—C. F. BURRIS, Safety Manager, International Business Machines Corporation, New York.

"The Comradeship of Production"—RODERIC OLZENDAN, Special Representative, *The Reader's Digest*.

Mr. Michael Supa is a blind man who overcame his own handicap to become the Supervisor of physically handicapped personnel of the International Business Machines Corporation. With Mrs. Supa, he is chatting with Major General Paul R. Hawley, Acting Surgeon General of the Veterans Administration, who was one of the principal speakers

that two men, 45 years of age, well established in their professions, each loses through amputation the index finger of the left hand. Such a physical impairment is by no means as severe as blindness, but the distinction between the disability and the resulting handicap can be made more obvious by the use of this example.

Let it be assumed that the first of these two men to lose his left index finger was a lawyer. To be sure, he would miss the presence of his index finger, and for a time it might cause him considerable annoyance and inconvenience. His capacity to earn a living, however, would not be affected. He would continue to function in the legal profession as efficiently as in the past.

Suppose, however, the second of these two men was a professional violinist. The effect of losing his left index finger would become immediately apparent. His disability would result in a severe handicap, for he would be deprived of the most essential factor of his professional life. His inability to earn money might compel him to change his manner and place of living. A combination of these two factors would create additional personal psychological problems. In his case, the handicap accompanying the loss of his index finger would be great. This illustration shows that two men, even though they have the same disability, may be handicapped to entirely different degrees.

The same holds true with respect to blindness. The photographer who loses his eyesight sustains a greater vocational handicap than would the man who winds film in the dark-room if he were to lose his sight. The conclusion to be drawn from this is that when blind people are being considered for work, it is necessary that they should not all be regarded as similar because of their blindness.

Not all blind people will care to look for work in the industrial and business world. A very considerable number, however, are looking toward business and industry for jobs.

The problem with which the blind are confronted is not the lack of work that can be done by them, but rather the lack of willingness to permit them to do the work. The blind are not unmindful of, but they are deeply grateful for, the opportunities of work so plentifully provided for them during the past few years. They want to continue as productive and contributing members of their community. Business and industry can help to provide the opportunities, but, in order to do so, the men who are charged with the responsibility of selecting personnel for their organizations must have a knowledge of the blind who seek to work with them. First and of greatest importance is the evaluation of the blind person's ability. Too many persons, when they are first confronted by a blind individual, attempt to evaluate his capabilities by imagining what they could do if they themselves were blind. This is unfair, because the person who never has been blind cannot accurately imagine himself in the blind man's position. Those who attempt to do so very often emphasize the disability to a disproportionate degree.

Second, there are certain kinds of work which, upon inspection, are very suitable to blind people. One such example is the matter of the operation of a typewriter. Even those persons who possess sight learn to operate the typewriter by touch. The blind person who cannot be tempted to look at the keys finds the operation of a typewriter a most natural activity.

Third, the fact that there are certain jobs that happen to be suitable to the blind should not limit the blind person who possesses aptitudes and capabilities which can be used to advantage in positions of greater importance. More than 1100 soldiers and sailors have lost their sight in the service of their country. Some have a good background of experience that will entitle them to more than a job selected solely from the point of view that it can be done by a blind person. They should not be penalized because they lost their sight.

Fourth, a healthy and helpful attitude on the part of the public in general and on the part of business and industry in particular must be adopted. If we are to have a world in which blind people can succeed, it is just as important that the people who are not blind have the right attitude toward those who are.

Despite the foregoing, there may be some people who might not have the confidence to proceed with the placement of blind workers. For these, as well as for those who would appreciate the help of people who know the blind, it was recommended that they enlist the aid of the public or private agency for the blind nearest to them. These organizations are ready, willing, anxious and qualified to help with the placement of blind workers.

Capable blind people have proved themselves efficient workers in business and industry. If they have the energy, intelligence, temperament, personality and capability necessary for the job that anyone might have, the opportunity to work should not be denied them. A willingness to employ plus the actual employment of capable blind people will contribute to the welfare of the community as much as it contributes to the welfare of the blind. The employment of blind people is as practical as it is worth while.

MAJOR-GENERAL PAUL R. HAWLEY discussed the subject "Activities of the Veterans Administration."

'In the beginning we fell heir to a system which had been in vogue 25 years, and was based primarily on giving as much as possible of medical veteran's care by a full-time staff of doctors. I think it is fair to state that this system never reached the point of perfection that the veterans of the country desired when there were only four million veterans as a responsibility of the Veterans Administration.

'It seems to me that it would have been very foolish to extend this same type of organization to the care of the 20 million veterans which we have now or will shortly have to deal with. Our program has only one object, that is give the best possible medical care to the veterans. To do this, we think we should exploit the best in American medicine. It is impossible for us on any terms of employment which the Congress would have authorized, to draw into a full-time organization the best in American medicine, nor would it be wise, and so we have done what industry more and more is doing, we are turning to those reservoirs of medical talent in the civil life of our country, just as industry is already farming out certain of its problems to established organizations and universities.

'We feel also that in this program we are contributing something to the facilities of the medical profession in this country. That is not our objective, but we are happy, since we have this big undertaking, to be able to contribute so much. Medical schools are not distributed uniformly on the basis of population in this country, and when we cross the Mississippi River we just run out of

medical schools until we come to the west coast. So we must have smaller hospitals that can give emergency care which will account for 80% of the disabilities which would need only the talent of good general practitioners and interns, referring to the larger institutions those cases which require the care of highly-trained personnel.

'We have already embarked on this program; it has progressed into public print, the battle is on.

'In the matter of locations, it seems, so far as their political locations are concerned, that they have been classified in the same category as post offices, and so if we are to carry this program out, the people and the Congress of the United States have got to decide whether they are going to treat veterans in post offices or whether they are to be placed where we can give them good medical treatment.

'We hope—and we have already started the program of arranging with local medical societies under an agreement which is satisfactory to them and to us—to provide outpatient care for which the veteran is authorized. I could talk at great length on this program, but I feel that I should at least outline to you what we hope to be able to accomplish before we get to the program immediately in hand, the Army Veteran in industry.

'No one wants to keep the veteran at work more than industry. In this we will cooperate with industrial medical departments to the fullest extent. I think it would be a mistake for us to set up parallel organizations. In the first place, I don't think we can do it as well as industry has done it, but I think that we should assist within the financial limits set up by law in this movement that has been set up in industry for the purpose of keeping all workers at work.

'So we say to every agency on the outside, to every branch of society, "This is a national problem; you must help." We shall cooperate with you, we shall furnish you with all the assistance we can, but there are just not enough people in a government bureau, nor should there ever be, to attempt to solve this problem within the Veterans Administration. This is one problem in which we cannot say "Well, we pay taxes; let George do it," because George will never be able to handle this problem without the help of every responsible person in the United States.

'MR. SUPA has told you about the use of the handicapped disabled veteran in industry as industry exists. He brought out one very important point there, that there are certain limitations to jobs which the handicapped could do, but, more especially, that there are certain limitations as to the environment of the job and not the actual job. For example, he points out that the blind worker cannot do work which requires him to move freely about the shop.

'To extend that idea, we are to have thousands of people who are unable to work in any kind of environment which you could possibly create in industry; you cannot make a friendly enough environment to employ these people. Take the patient who requires medication in addition to daily nursing attention. Take other cases that you can think of. Take the insane. Why should we deny the mentally handicapped person the privilege of earning a living when we do not deny the physically handicapped person? We have difficulty in justifying that. How can we justify consigning the mentally handicapped, even though he be very crazy, to four walls with barred windows for the rest of his life, there to degenerate to practically a vegetative existence? Why can't we create environment in which he can work, just as we do with the physically handicapped?

'Now, this is something that is not profitable for industry; this is for the government to undertake, to create an environment in which badly handicapped people can work. But industry must furnish the work; these people must make something novel and useful. What they can make we have only thought about, but we are sure that they can make small parts, small assemblies and things of that sort. There will be objections from labor, because when there is unemployment you hear the cry "Here we are unemployed and they are taking jobs away from labor."

Vincent P. Ahearn (left), a member of the Foundation's Board of Trustees, and Chairman, Industry Members, National War Labor Board, chats with Dr. C. O. Sappington, industrial health consultant and Editor of Industrial Medicine

'We think those objections can be overcome and that 25,000 jobs can be provided—not 25,000 fully productive jobs. That small group cannot significantly influence the labor market, but to those 25,000 people it is going to mean a great deal.

'In this program we ask for your thought and your advice and your help, and we in the Veterans Administration in turn pledge to you our complete cooperation and our very best efforts to help the veterans in these ways.'

Wednesday Afternoon

DR. C. O. SAPPINGTON presented "Industrial Health Department Functions and Relationships."

This was a preliminary report on a field study for the purpose of analyzing the policies and procedures of industrial health departments, how they are administered, and what results are obtained. The active work began in April, 1945, and will be continued into 1946.

It is expected that several hundred different plants will be included, involving an industrial population of over one million persons, including large, medium and small plants in 30 different states, with many diversified types of manufacturing—which will constitute a fair statistical sample of what is going on in industrial health departments over the nation.

Three phases of this investigation were selected for brief discussion. These subjects were discussed only from the viewpoint of incomplete data, but there were certain definite trends shown by the present results. These subjects were the effects of reconversion and civilian adjustment activities on industrial health department services; some of the intramural relationships of industrial health departments; and the costs of industrial health services.

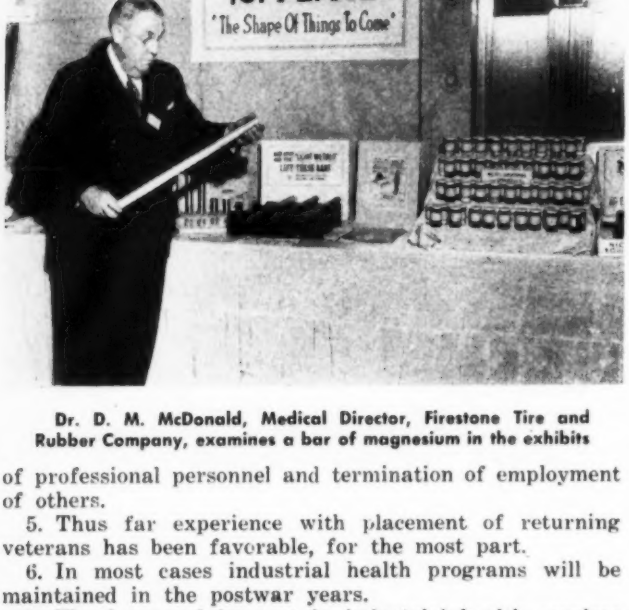
EFFECTS OF RECONVERSION:

1. The temporary reduction of working forces will be reflected in a temporary reduction of professional personnel. However, many industrial plants will enlarge and rebuild their departments during this adjustment period.

2. Reliable business figures indicate that only 25% of business plants need entire reconversion.

3. There seems to be a decided reduction in the number of health complaints, probably because of relief from pressure of war production and the general anxiety generated by war. The results show a reduced incidence of nervous indigestion, insomnia, cumulative fatigue, and nervous exhaustion, as well as the finding of progressive lowering of blood pressure readings in employees of 45 years of age and over.

4. On the other hand, in some quarters there has been an increase in the incidence of occupational disease in plants which have had no such experience during the years of the war emergency. This may be due to the laying off



Dr. D. M. McDonald, Medical Director, Firestone Tire and Rubber Company, examines a bar of magnesium in the exhibits

of professional personnel and termination of employment of others.

5. Thus far experience with placement of returning veterans has been favorable, for the most part.

6. In most cases industrial health programs will be maintained in the postwar years.

7. The increased interest in industrial health services by organized labor groups will oblige management to give increasing attention to healthful working environment. There is no question that medical services in industry will play a greater part in industrial management concepts than ever before.

8. One element in sustaining and maintaining an adequate industrial health service is the opportunity to maintain production at a high level. This interdependence is apparently overlooked.

9. Professional personnel have a great opportunity to demonstrate economic and industrial relations benefits from their work. This is no time for retrenching on the activities of industrial health departments.

INTRAMURAL RELATIONSHIPS. For quite some time there have been varying differences of opinion as to the results occurring when the chief physician or medical director reports to the industrial relations division or officer, as compared with the effects which result when the same medical officer reports to top management. Perhaps much depends upon the type of men to whom the reporting is done and their active interest and cooperation; perhaps also a great deal of the success attained depends upon reliance and confidence being placed in medical leadership, with as little management interference as possible. Apparently good results have been obtained from both methods, although there are those who feel that from a strong organization point of view, reporting to top management is to be preferred.

COST OF HEALTH SERVICES. There has been a great deal of difficulty in securing true cost values from industrial establishments, and an example will now be given of the kind of difficulty that has been encountered. The following table shows the difference in safety and medical costs in a very well-organized and maintained division of a large national corporation:

	Safety	*Medical*
1944	$5.60	$9.60
1943	.30	2.40
	$5.90	$12.00
Av.	$2.95	$6.00
	18	4

The fallacy of using average per capita costs per year is well demonstrated here. One can easily see that this average is not a true measure of the cost fluctuations in two consecutive years. The same kind and quantity of service was rendered during each of these years. Officials attribute these differences in cost solely to a change in concept by the accounting department as to what the same report form requested. If this can occur in a well-managed corporation, what can be said of others? We are beginning, therefore, to doubt the validity of figures previously quoted by many of us in various reports.

One of the first tasks to be attacked will be to make a standard, carefully-thought-out definition of what plant medical expense is and what it is not, so that the expense items may be mutually exclusive.

DR. LEROY U. GARDNER discussed "Accurate Diagnosis of Silicosis—Possible Sources of Error."

The diagnosis of silicosis rests on three bases, a history of adequate exposure to free silica dust, the demonstration of a characteristic nodular pattern in an x-ray film of the chest, and a physical examination which reveals very few abnormal signs in most uncomplicated cases. One's objective may make him forget that, not one, but all three of these factors are essential to the diagnosis. From the lawyer or the physician representing a claimant for compensation we hear that the plaintiff must have silicosis because all of his industrial life has been spent in an industry whose atmosphere contains so many millions of particles of free silica dust. Yet a glance at the claimant's x-ray films may show nothing to support the contention. From the roentgenologist or the internist of an urban medical center comes the diagnosis of silicosis because the film reveals a generalized nodular pattern and the subject reports that he has worked at a dusty job. Neither roentgenologist nor internist is in a position to obtain the details of the occupational history that will indicate whether the dust contained significant quantities of free silica.

Unless there is proof that the subject has been exposed to free silica dust for periods measured in years we have no right to assume that a nodular x-ray pattern is indicative of silicosis. Such patterns may be produced by other causes; some of them the result of inhaled materials other than free silica, some may be due to infections or systemic diseases which should be disclosed by a thorough physical examination.

Among these conditions is the so-called *arc welders' siderosis.* All substances of high atomic weight are opaque to x-ray, and in sufficient local concentration they cast shadows on a film. Examples of such substances are the compounds of barium and the rare earth minerals (discussed by DR. CRANCH). On the other hand, organic iron from the blood may at times cast nodular shadows which simulate silicosis.

Another disease is now being recognized which superficially resembles nodulation of silicosis. This is pulmonary sarcoidosis, apparently a tubercle-like infection of unknown cause. This disease occurs here and there throughout the population at large but has frequently been attributed to pulmonary irritants of industrial environments. One case from a rayon mill was recalled, one from an asbestos plant, and another in a graphite miner. Recently a considerable number has been found in industries using beryllium and its compounds. It has not occurred in every plant using these materials. It has not been possible to reproduce sarcoidosis with beryllium compounds in animals. Much must be done before it can be concluded that sarcoidosis is an industrial disease.

Many have seen or heard of the condition commonly nicknamed "Wheatena," or miliary calcification of the lungs. Here the x-ray reveals nodules, often scattered throughout both lungs, but these nodules are of unusual density and their distribution is not uniform. It is assumed that they represent healing of some form of infection the nature of which is still unknown. It could not be tuberculosis, for these people have never been sick. The cases are most common along the Ohio River and in Missouri and Kansas.

The knowledge that such conditions exist should make physicians more cautious in diagnosing silicosis, particularly in cases from industries where environmental conditions are unfamiliar or not clearly defined. More progress would be made if roentgenologists would merely report a shadow pattern as nodulation with the qualification that

this could be interpreted as silicotic in origin if supported by a history of adequate exposure to free silica.

DR. A. G. CRANCH made the following contribution to the subject "Accurate Diagnosis of Silicosis—Possible Sources of Error."

Four types of cases illustrating erroneous diagnosis of silicosis were described. First was a group of men exposed to dust from milling rare earth oxides and fluorides used in core material for illuminating carbons. Occasional batches containing silica are mixed, perhaps once or twice a month, but this exposure was not significant.

One case was a man 60 years old who had had influenza and chronic bronchitis. His x-ray picture was startling. An award of total disability from silicosis was made, although the presence of other conditions was recognized. A young man in the same department who had been exposed for a much shorter time had a similar x-ray picture following an attack of influenza. The Compensation Board decided he had silicosis but granted no compensation because there was no evidence of disability. From subsequent examinations of five or six more men in this department another similar case was found. This man had no disability and made no claim. These cases illustrate conditions from inhalation of x-ray opaque dust rather than the fibrosis from silica exposure.

Other cases have come up as the result of physical examinations by draft boards. One man in his early 20's had had only seven weeks of plant exposure, three weeks on one milling unit and four weeks on another, where he had occasion to load one or two bags of mica into the mill daily. He was declared unacceptable by the draft board on account of advanced silicosis. Subsequent examinations showed decreases and reappearance of shadows. After 20 months the x-ray picture showed no evidence of nodulation or linear markings. During the two years of study the boy felt well and had no clinical symptoms. The case was finally diagnosed as Boeck's sarcoid.

Another case was of a man 30 years old who worked in a dust-free plant. The only silica used was in a filter on another floor at the opposite end of the building. The x-ray picture showed widely diffuse shadows, and, although not particularly nodular, the case was declared to be silicosis. After extensive study the case was diagnosed as mitral stenosis, a heart condition; the shadows were due to congested pulmonary vessels.

CONTINUING the discussion on "Accurate Diagnosis of Silicosis—Possible Sources of Error," DR. L. E. HAMLIN stated as follows:

'For several years we have been concerned with chest x-ray findings among grinders and burners in our foundries because the pattern of nodulation observed in the roentgenogram, the clinical aspects and history of occupational exposure, are inconsistent with the present conception of silicosis.

'A description of the operation in the one plant where the greatest number of these cases developed will be representative of all of them. There is only a variation in the percent of the men involved in each plant, and this is directly related to the extent to which the cleaning and grinding department is walled off from other operations which might afford some dilution of the dust.

'Castings ranging from a few pounds to several tons in weight are shaken out of the molds while still hot and, after the cores are knocked out quickly, they are annealed. The castings are then quenched in water and taken to the burning floor where gates, risers, and fins are burned off with oxyacetylene torches. Some pits and holes are filled at this point by electric welding.

'Here the castings enter the cleaning room; small pieces are tumbled and then are finished on pedestal grinders which are well exhausted. The larger pieces are finished with stiff shaft, swing frame and small hand grinders. These pieces usually have sand adhering to them, much of which is burned into the surface. It was the practice to go over practically the entire surface with the grinding wheels to produce a clean metal surface as well as to smooth off welds and the sections where gates, risers

Long distance travelers were M. I. Homewood (left), of Melbourne, Australia; a member of the Australian Ministry of Munitions, now studying in this country, Major G. S. Baldry, of Winnipeg, Canada, attached to the Medical Corps of the Canadian Army, and W. M. Ward, also of Winnipeg, a member of the Manitoba Department of Health and Public Welfare

and fins had been burned off. These grinding operations are productive of a large amount of dust as well as the large particles seen as sparks. This dust is composed of the abrasive material, the wheel binder (plastic), sand, scale, and the metal which may or may not be completely oxidized. Local exhaust had been applied to the swing frame grinders only in a very minor degree.

'A circulating heater, using an ineffective steel wool and coke dust filter, was altered to permit the continuous introduction of outside air through the heating coils. This was done in 1943 and showed a distinct drop in the average dust concentration in the end of the building where it was located. There was no significant change at the other end of the building where there is some general exhaust ventilation at the roof (30,000 c.f.m.).

'Since the condition believed to be silicosis could only be attributed to the sand on the castings, a hydroblast was installed late in 1943 to clean the surfaces of the castings before they were ground. Although this did greatly reduce the amount of silica, in the air-borne dust the total number of dust particles per cubic foot of air was just about the same as it had been before the hydroblast was installed. Repeat x-rays in 1944 still showed progression of the silicosis-like pattern in some cases, although the amount of silica dust in the air is far below what is generally considered the threshold limit of five million particles per cubic foot.

'One hundred and thirty-three midget impinger and electrostatic precipitator samples over a three-year period during the months from August to December were collected. These ranged from 4.0 to 67.2 million particles per cubic foot and it is noteworthy that only six out of the 133 samples showed over five million particles of silica dust per cubic foot of air, and only one reached 8.5 million.

'Samples were studied by x-ray diffraction, petrographic and chemical analyses of pooled impinger samples of air-borne dust. After removing the metallic elements by digesting the dust with hydrochloric acid, the insoluble residue, consisting of quartz, corundum, rutile and iron glass or other silicates, was separated into size fractions, and the composition of these determined.

'It was found that nearly all the iron was present as the magnetic oxide Fe_3O_4 and existed mostly as fume or as fine particles less than one micron in diameter, but there were many clumps up to 40 microns, and spheres (probably iron glass) up to 25 microns. The quartz content of the entire samples was higher in the fraction above 10 microns. There was little of the highly active forms of free silica (cristobalite not over 0.31% and tridymite 0); most of it existed as ordinary quartz, particles three microns and less in diameter, constituting only about

Chatting during intermissions of the Tenth Annual Meeting of the Industrial Hygiene Foundation are W. C. L. Hemeon, a Foundation staff member (left), and Roderic Olzendam, special representative of "Reader's Digest," who delivered the wind-up address on the second day of the meeting. His subject was entitled "The Comradeship of Production"

0.6% by weight of the sample; total quartz ranged from 3.1 to 3.9%.'

DR. O. A. SANDER concluded the discussions on "Accurate Diagnosis of Silicosis—Possible Sources of Error."

The term pneumoconiosis simply means dust added to the lungs. Contrary to a fairly common interpretation, it does not necessarily indicate fibrosis in the lungs. Similarly, the term siderosis describes lungs in which iron oxide dust has been deposited and is without any implication so far as fibrosis is concerned. This meaning is contrary to Jenkins' original use of the word in describing cases of actual silicosis with concurrent deposition of iron oxide. Only two known substances, silica and asbestos, qualify as fibrosis-producing agents. Others may be shown to produce secondary fibrotic action, but none is known today.

Postmortem study of the lungs of a welder, whose chest x-ray picture was similar to that of silicosis, showed no evidence of fibrosis. This is confirmed by a recent British report on a man exposed to iron oxide in silver polishing.

DR. F. R. HOLDEN and MR. HYATT presented an abstract of a report on "Accurate Measurement of Silicosis Hazards."

'We believe that the particle size composition of dust has not received attention commensurate with its importance. During the early classic studies on silicosis the composition of dust was determined by the analysis of samples of settled dust (so-called rafter samples). This practice seemed logical, as material which had settled on ledges and rafters had reached those positions after floating through the air. Later it was proved that it is impossible to judge the chemical and mineralogical composition of the dust that actually gets into the lungs of exposed workers by analyzing either the parent material or rafter samples. Rafter samples, because of the higher settling rate of coarse particles, contain an exaggerated portion of them, as compared with the number in the air.

'For several years it has been our practice to employ the electrostatic precipitator for the collection of samples of dust for composition analysis, collecting them from the breathing zone of workmen. The analysis of these samples, however, consistently showed the presence of dust particles as large as 50 microns or even larger. Analysis for free silica is always reported on a percent by weight basis. Therefore, the presence of one 50-micron particle would have *as much effect on the analysis* as would 1000 five-micron particles.

'It was, therefore, logical to modify our techniques to include separation of the air-borne dust samples into two size fractions. We chose to separate the dust into portions at the five-micron level. The five-micron and less dust is designated as respirable dust, and its analysis provides the data for appraisal of the silica dust exposure.

'The satisfactory application of size separation required quantities of air-borne dust amounting to several hundred milligrams. In some instances it was necessary to operate the electrostatic precipitator during several work days to accomplish this result. This was impractical. Accordingly, we developed a composition dust sampler which employs salicylic acid as the filtering medium. This material was first suggested by British workers for obtaining dust samples from air of mines for chemical and petrographic analysis. Our instrument comprises a rectangular box whose sides consist of interchangeable double screens. The box is 3 inches wide and 10 inches square. There is a one-inch opening at one end from which air can be drawn through the filter. Each side of the filter is made from two 100-mesh copper screens which serve as supports for ⅛-inch layers of salicylic acid crystals. A number of sets of these filter screens have been provided for the instrument so that they can be filled in the laboratory, attached together, and transported for field work. It is necessary to make certain that there are no large openings in the salicylic acid filter mat. The presence of large openings will reduce the efficiency of filtration, requiring longer periods of time for the collection of the sample.

'Air from the breathing zone of workmen is drawn through the filter employing a small blower. We have converted our electrostatic precipitator so that it can be used as a source of suction. The modified electrostatic precipitator will draw approximately 20 cubic feet of air per minute. The electrostatic precipitator with the I-H-F filter will, therefore, collect as much dust in one hour as the precipitator alone will collect in one day. Two other blowers which we commonly use with the filter draw 50 to 65 cubic feet of air respectively.

'Salicylic acid resembles macerated blotting paper. However, it will dissolve completely in alcohol leaving the dust suspended. The dust is filtered from the alcohol on hardened filter paper (No. 50 Whatman) in a Buechner funnel employing suction. It is necessary to wash the dust until all of the salicylic acid is removed. The dust is then washed from the paper with alcohol and separated into size fractions.

'During the past 12 months we have applied these techniques for the appraisal of numerous silica dust exposures. Some of the results are presented in a table to be published in the full text of the paper. It was observed that in most of these instances there was a significant difference in particle size composition.'

MR. W. C. L. HEMEON presented "Findings from Foundation Plant Surveys."

'Control of dust continues to be our most frequent plant problem. The extent of our activity can perhaps best be pictured in these figures. MR. HYATT and DR. HOLDEN performed more than 1000 dust counts in the past 12 months —which means 10,000 individual microscope field counts. In addition they have obtained about 130 atmospheric composition dust samples and processed them for size separation in alcohol for analysis by x-ray diffraction. This work has been distributed among potteries, glass plants, foundries, refractories and several other industries.

'Several hundred additional analyses were made for lead, mercury, selenium, arsenic, cadmium, antimony and miscellaneous gases and vapors in a number of different industries such as steel, rubber, chemical, butadiene, chlorine and machinery manufacture.

'During the past year the Foundation carried out the most extensive engineering study on dust control in the pottery industry that has ever been conducted.

'The improved techniques described by HOLDEN and HYATT have afforded an invaluable perspective in this study as well as in our other engineering work. In many instances tests have proved that some operations require no dust control equipment, where it had been thought otherwise. Just the reverse was true in other cases.

'It has been held that dusty floors are a major source

of atmospheric dust in potteries. We have proved conclusively that the dust kicked up into the air by plant traffic in potteries is insignificant compared with other causes. We fully agreed that a clean plant with clean floors is good business and we advocate it, but it is important that it does not contribute materially to silicosis hazards, at least in the pottery industry.

'Between 10 and 15 years ago certain potteries requested their flint suppliers to add small quantities of water to the material in order to reduce the dust from handling. The practice was inaugurated and mechanical difficulties overcome within two to three years, and it is now common. The nominal moisture content is 3%, and our studies have proved that when the flint is *uniformly* moist to this extent, there is practically no dust in its handling. In practice, the material does not maintain uniform moisture content due to partial drying in transit and some dust is possible when it is handled. We have developed various supplementary measures to counteract the effect of drying out and completely to eliminate the hazard.

'We continued work on general air pollution during the year with several hundred measurements of sulfur dioxide concentrations in the vicinity of a smelter and a power plant—all of which were below significant concentrations from the standpoint of plant life. We conducted a preliminary investigation of odors and fumes alleged to affect a wide area in a middle western city, and have appraised dust pollution problems by measuring rates of dust escape from stacks. All straws in the wind indicate that industrial communities are becoming more insistent in reduction of general pollution. The absence of such engineering data probably accounts for the action of one official of a certain city that has been plagued by smoke and irritating fumes. The official advises the public to "avoid use of incinerators, if possible; do not build bonfires; do not operate an automobile which consumes an excessive amount of oil; and avoid beating rugs or otherwise releasing dust in the atmsophere."

'One of our staff investigated complaints by electric welders of irritating vapors that had caused hospitalization of several with severe lung irritation. The welding was located near a degreasing tank, and the presence of trichlorethylene vapors in the area suggested the formation of phosgene gas. Tests for phosgene under simulated conditions were negative even though the investigator observed a strong irritation of the upper respiratory tract. The nature of the irritant substance has not been identified, although the consensus was that a severe lung irritant similar to phosgene was in fact formed by the action of the electric arcs on trichlorethylene vapor.

'Production of the atomic bomb posed some of the most spectacular industrial hygiene hazards in history. Safeguards were built into those plants and atomic bomb workers were protected from the insidious effects of crippling radiant energy and toxic atmospheric emanations. These precautions were an integral part of the problem of manufacture of the uranium for the bomb and illustrate a principle that is applicable to more commonplace problems in engineering control of occupational disease hazards. That is, that any hazardous industrial operation can be carried on in reasonable safety if preventive measures are engineered.

'Usually adequate control is moderate in cost, but sometimes the money expenditure is high. Control occasionally may require a fundamental change in operating methods. When the change takes the shape of a major project it should be engineered to incorporate all possible operating cost improvements at the same time, to help justify the capital outlay.

'One should not make the mistake of assuming that the cost of an exhaust system or other means of control is all loss. It may show a definite economic return on the expenditure which makes it an investment. I like the example afforded in the ventilation for welding fumes in shipyards, which incidentally are innocuous fumes. ROSS and DRINKER report that "for the average shipyard, the total annual cost of the ventilating program, including both labor and depreciation of equipment, is 1.5% of the total annual payroll of the welding department. Can the successful control of fumes increase the daily welding by 1.5%? If a welder burns 17 pounds of rod a day under poor conditions, can he and will he burn an additional quarter-pound of rod when the compartment is well ventilated? Yes, in fact he will burn considerably more. Welding superintendents have estimated that output in confined areas on the hulls increased by three to five pounds of rod per man after a good ventilation system was installed." This is a tangible benefit, other examples of which can be found in other occupations.'

Thursday Morning

MR. THEODORE C. WATERS presided at the meeting of the Legal Section, and presented a paper on "Legal Developments of 1945 respecting Industrial Health."

It is impossible to predict the trend of Federal legislation in the field of industrial health, but there is an increasing demand on the part of labor for the appropriation of Federal funds to assist state agencies in the administration of compensation and labor laws for the benefit and protection of employees. Industry must assume additional responsibilities that will be imposed by these laws, and it will continue to be good business to promote programs for the protection of industrial health, so that the cost of compensation may be decreased and that better industrial relations may be attained.

During the present year all of our state legislatures have been in sessions except Kentucky, Mississippi and Virginia, and a flood of legislation was introduced designed to liberalize compensation acts providing compensation for accidental and occupational disease injuries. There are now 16 states and the District of Columbia that provide for general coverage for occupational disease injuries, and 16 states wherein schedule coverage is provided. Several important bills dealing with industrial health have been introduced and are now pending in the Federal Congress. There have also been a number of important court decisions construing our compensation laws, and it is the purpose of this report to summarize briefly this legislation and point out a few of the more important court decisions.

MICHIGAN has amended its statute to provide that all employers subject to the provision of the compensation act "shall furnish to their employees without charge a complete physical examination at regular intervals, but not more than one examination in each period of six months, and shall furnish to the employee a true copy of the medical report when the presence of silicosis, pneumoconiosis or other dust disease is found." This act became effective May 28, 1945; therefore, the initial physical examination of all employees must be completed by November 28, 1945.

MINNESOTA has amended its statute by requiring annual medical examinations of employees exposed to the hazards of silicosis and asbestosis, the cost of such examination to be divided equally between employer and employee. Reports of such examinations, together with x-ray films and other original exhibits, are required to be filed in the office of the Commission, making the reports a public record. Upon the termination of employment, the employer may request the employee to submit to a final medical examination, by giving 10 days' notice in writing of the time and place where the examination is to be made. Any employee who refuses such examination, thereby waives any right to compensation for occupational disease that later develops.

FEDERAL LEGISLATION. The Committee called the attention of members to bills introduced in the Federal Congress as Senate Bill No. 1050, introduced on May 24, 1945, by Senators Wagner and Murray, and House Bill No. 3293 introduced on May 24, 1945, by Mr. Dingell. These are companion bills and purport to provide for national security, health and public welfare. Both bills have been referred to committees and are now pending hearings and further actions.

Attention was also called to House Bill No. 525, and

the companion bill, Senate Bill No. 1271. These bills purport to "provide for cooperation with state agencies administering labor laws to establish and maintain safe and proper working conditions in industry and in the preparation, promulgation and enforcement of regulations to control industrial hazards." They propose to establish an industrial safety commission in the Department of Labor, and would authorize the annual appropriation of $5,000,000 for grants in aid to State Labor Departments to assist them in establishing safety and healthful working conditions in industry. The House Bill has been favorably reported by the committee and is now pending action in the House. The Senate Bill was referred to the Committee on Education and Labor, and public hearings upon the bill have been held during the past week.

MR. IVAN SABOURIN discussed "Canada and Compensation" and presented the subject from three viewpoints: (A) Compensation, as it progressed, its development; (B) Compensation, as it is in character, in application; and (C) Compensation, as it reflects the function of law in society.

COMPENSATION, as it progressed in Canada.

Canada: Its legislative powers in connection with compensation.

1. Canada: a nation fully autonomous, although freely associated with others in the British Commonwealth of Nations (Cf. Mignault: on Canada and the Imperial Statute of Westminster);

2. Canada: nine Provinces associated in a Federation with every Province having exclusive jurisdiction in property and civil rights, from which field flows that of compensation (Cf. The British North America Act 1867).

The provincial Workmen's Compensation Boards came into life as early as 1914.

COMPENSATION, as it is in character in application.

Compensation laws are in force in eight of the nine Canadian Provinces. These laws are administered by a Workmen's Compensation Board in each Province. It can be said that these Boards *are autonomous in character, having exclusive and final jurisdiction on the facts and on the law*, save in two Provinces, Nova Scotia and New Brunswick, where, on law or jurisdiction, appeal may be had to Supreme Court with permission of a judge.

This final and autonomous character of Canadian Boards (which bars, therefore, interference from the courts) is a feature of the system.

'We may be said to have now the compulsory collective liability system, a system quite close "to the Commission system" as enforced in the U.S.A. (a system we know to be different from the actual British system of Workmen's Compensation which does not call for "Accident Boards or Commissions").

'One should not confound the Ontario system, or the Quebec system with State Administration.

'Generally speaking, we can say that in Canada all interested parties, and, particularly, industry and labor, have been satisfied with the operations of our Workmen's Compensation Boards.

'This paper, which expresses a personal opinion of the speaker, is not meant to convey that courts, provided the machinery be swift and adequate, should not supervise the administrative bodies of the state including that of Compensation, just as private enterprise, such as insurance companies, whenever it can be effectively remedial, preventive and equitable, should be maintained as a fair and salutary competitor, a competition which would ensure an enduring healthy condition.

'Mutual interests will always be more readily furthered through interpenetration and similarity in social reforms than by any other method; and this can be said of the mutual interests of industry and labor in Canada and the U.S.A., as it can be said of our countries as units with common interests.'

COMPENSATION, as it reflects the function of law in society. The human agency is and always will be the greatest wealth of industry. Relationships between this human agency and industry necessarily involve principles, laws. Whether the relationship be from the raw material to the machine, or the machine to the man, fixed variations will be observed, axioms will be gathered and data will stabilize into laws. There is perhaps today no field other than compensation, in sociology, so abundant in occasions for society to indicate its sense of collective responsibility.

MR. ALBERT PIKE, JR., presented the subject "Health Insurance to Compensate for Wage Loss."

Health insurance is one of those convenient all-inclusive phrases, meaning pretty much what one happens to want it to mean. Is its purpose to provide prepaid medical and hospital care? Or does one simply mean by it a plan to pay cash benefits to a worker while he is off the job because of sickness, in order to compensate him for part or all of his wage loss? These two insurance fields—health services and compensation for wage loss—are quite separate. One is intended to pay the doctor and the hospital, the other helps pay the more prosaic grocery bill and the rent.

Health insurance does not, of course, insure anyone's health. One can get just as sick with it as without it. Nevertheless, it is an appealing phrase which is popular with the public, and consequently a field due for development. New ideas are appearing fast, but of particular interest are the social security proposals. The impetus for a health program under social security, either Federal or state, comes perhaps from the almost universal need for good health care and for at least some cash income during periods of sickness.

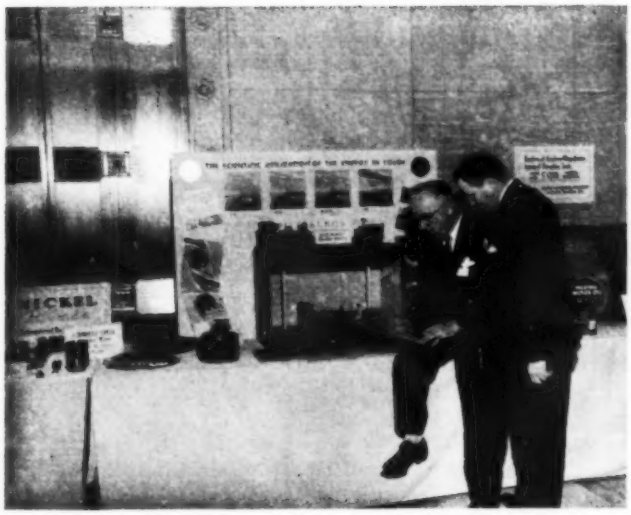
That brings up the real central issue of the day in the cash sick benefit field, as it does also in the health service field. Is our present system of coverage on a voluntary or optional basis satisfactory, or would the public interest be better served by a law which would require universal coverage?

On the face of it, the problem of sickness indemnification is simply one of paying enough workers enough money enough of the time they are out sick, but without overdoing it. Representatives of industry are greatly concerned with the health of employees, both occupationally speaking and otherwise. So far as non-occupational disabilities are concerned, industry has perhaps a greater role to play in the shaping of plans to provide cash sick benefits than directly with hospital and medical care for non-occupational disabilities, because cash sick benefits are directly tied up with personal relations. Sick benefits, or sick pay, are as much a managerial or personnel problem as they are a straight insurance matter.

About six and a half million employees in this country are insured for group accident and health insurance. That, however, is by no means the whole story. One must add to these the large numbers covered under employee mutual benefit plans, the labor union plans, and particularly those white-collar workers to whom many employers make a practice of continuing salary for limited periods of sickness just as if they were actively at work. Nevertheless, it cannot be said that we have anything like universal sick benefit coverage among the employees who could be covered, such as is achieved by the Rhode Island cash sickness compensation law.

The Rhode Island plan came about through a diversion of part of the unemployment compensation tax on employees, that state being one of only four which taxes employees as well as employers for unemployment compensation. For a tax of 1% of the first $3,000 of annual earnings, which used to go to the unemployment compensation fund as part of a 1½% tax, Rhode Island employees are entitled to disability benefits, both occupational and non-occupational, ranging from $6.75 a week to $18 a week, with a maximum of $365 for one benefit year for the highest earners.

'In my opinion, the crux of the problem is to get the sick employee back to work as soon as his health permits. Responsibility for recovery falls in large part upon the doctor, but relative freedom from financial worry helps too. However, while bearing in mind the necessity for seeing to it that a sick worker does not return to work too soon just because he needs money, the payment of over-liberal cash benefits during sickness may actually postpone psychological recovery. A disabled worker may



The color dynamics exhibit of the Pittsburgh Plate Glass Company is studied by A. R. Kernan (left), and Morris Spelic, both of the Carnegie-Illinois Steel Corporation

really be well again but won't admit it, perhaps not even to himself, particularly if his material needs are well taken care of by sick benefits which will stop as soon as he goes back to work. This effect can be proved statistically. In a paper presented last year, MR. ANDREW COURT gave clear statistical evidence that a liberal treatment of short-term disabilities does not reduce the claiming of benefits for long-term disabilities, as one might expect to be the effect of nursing minor indispositions, but instead increases it.

'I should say a word about the financial difficulties of the Rhode Island cash sickness compensation plan. In Rhode Island, tax collections had a 10-months' head start on benefit payments, during which time a fund of about three million dollars was built up. The fund later ran up to a maximum of something under four million, after which it started to go backward and at last report was down around two and a half million dollars. Judging by trends, and the fact that V-J day probably took away considerably more in tax income than it reduced benefits, the fund is now probably around two million and headed for trouble.

'We must, indeed, look elsewhere for a true assessment of the desirability of a cash sickness compensation plan. When we do, we come back at once to the fact that cash sickness compensation, as practiced in Rhode Island, and as it would be practiced elsewhere, eliminates the employer from responsibility and deals instead with all employees in the state as one unit. The results are more than a mere wastage of money in claim payments to undeserving claimants. Here are some of them.

'First, the Rhode Island plan has succeeded in uprooting a number of well-established sick benefit plans which were already based on the principle of using the employed group as the unit.

'Second, there is the wasted money in unnecessary claims because of the over-liberal maternity benefits and the duplication with workmen's compensation. There is evidence that the cost of workmen's compensation is also going up substantially because of the duplication.

'As a third item I should like to call your attention to the fact that putting money into a state fund means that it is everybody's money, and everybody's money is apt to become nobody's money. In group insurance we have found that the employed group is not only the best unit of administration, but a unit where the natural relationship of one employee to another helps protect the common purpose for which the insurance plan is formulated.

'Fourth, the elimination of the employer makes it necessary to have tight administrative controls which work hardships on deserving claimants while eliminating only some of the undeserving. Consider how the Rhode Island plan is run. There is no tie with the employer, who is the one who really knows whether John Jones is away from work, since all he had to do is to see whether he has signed in that day.

'How well, then, does private insurance cover the field? Adding in self-insured plans and payroll-continuation plans, there is quite a bit. From a questionnaire mailed to all Massachusetts employers of 20 or more employees subject to unemployment compensation, this Council established that at least half, and possibly as much as two-thirds, of Massachusetts workers are entitled to some form of cash sick benefits. The report contains some very interesting facts as to where this coverage is concentrated, and where it is most lacking.

'Other surveys of this type are in the making, or are being planned. I am thinking particularly of a survey now being conducted by the New Jersey State Chamber of Commerce, which is currently circularizing employers in New Jersey, asking them not only about sick pay benefits but also about medical and hospital care programs. I doubt if such surveys in other states will often indicate as widespread coverage as in Massachusetts, but they may indicate a substantial amount.

'A very interesting development has occurred in New Hampshire where an attempt was made to provide universal coverage for sick benefits without getting away from the employed unit as the proper unit of administration. Why not, they said, have a law requiring every employer to see to it that sick benefits are provided for his employees, either through his own payroll, or through some insurance company, or through a self-insured plan? It would be something like workmen's compensation, except that provision would be made for employee contributions even when payments are made out of the employer's payroll. The New Hampshire bill appears to be pigeonholed at the present time. I am not at all certain that it is the right answer, first because the present optional system of operation has very great advantages and is doing a good job in blanketing the field for cash sickness benefits, and second because its workability has not been fully explored. But if you must have universal coverage, here is a possible substitute plan for cash sickness compensation which achieves the purpose while preserving the employed group as a proper unit of administration, without, it should be noted, establishing compulsory insurance even though it does establish compulsory benefit payments.

'In conclusion, I should like to say again, health insurance is a complex field. The problem involved of providing adequate hospital and medical care can never get very far away from the problem of securing the services of the doctors and the hospitals. Compensation for wage loss, on the other hand, involves very little of the service of the doctor, but a lot of employer-employee relationship. What we need to recognize is that in cash sick benefit programs the employed group is the natural, and hence proper, unit of administration, and that wages and sick benefits must be closely integrated in each company according to the actual conditions existing there, rather than according to over-all average conditions existing throughout some broad area such as a whole state.'

MR. V. P. AHEARN presided as chairman of the Management Section, which followed, on Thursday morning. MR. ALEX W. DANN presented the subject "Better Working Conditions—Better Work."

'Managements of enterprises, with our own among them, increasingly support expenditures and arrangements which have the purpose of promoting better health and further freedom from bodily injury and good work surroundings for those on the payroll and, indirectly, for the families of those employed. Consideration for the other fellow, a humanitarian impulse and consideration for the stockholders or self interest provide mixed but sufficient motives and assure continued progress in the attention to health and safety, which has shown a really startling advance in the last 30 years, very gratifying to those who are interested in improvement of our free enterprise system.

'In the operations of our companies opportunities have

arisen to provide better job surroundings, and we will mention a few of which we have taken advantage.

'In-plant feeding as provided before the war, with central cafeteria, was expanded to provide three cafeterias and three canteens during the period of our larger employment. Centralization of food preparation was retained. Owing to food rationing, a much higher percentage of employees ate at plant cafeterias than would ordinarily have been the case. Many persons made this their "main meal." This and the quality and quantity of food decreased absenteeism and enabled us to retain employees who might otherwise have gone elsewhere, or not worked at all. This operation has been the subject of considerable favorable comment.

'Hospital conditions in the vicinity of our eastern shipyard were deemed to be inadequate to take care of the greater load occasioned by our enlarged employment. Full hospital facilities were installed in the plant and some non-industrial care was given to provide relief needed because so many doctors from that area were in the military service. Many employees at this shipyard were from southern and western states and, having no family doctor connection in the city, found it nearly impossible to secure medical attention. In addition, wholesale preventive advice and medication were given during the periods of several minor epidemics. This again decreased absenteeism and kept the employees who were working at higher physical efficiency.

'After many tests and research from the health protection standpoint, and with required official permission, we had perhaps the first successful underground operation of Diesel locomotives used in 1940 to 1942 in connection with tunnel constructions as part of the Delaware Aqueduct. Our section of this tunnel was 10.5 miles long. The ventilation system had a capacity of 12,000 cubic feet per minute of air, positive pressure, at the tunnel face. The system could also be reversed so as to suck out the fumes at blasting.

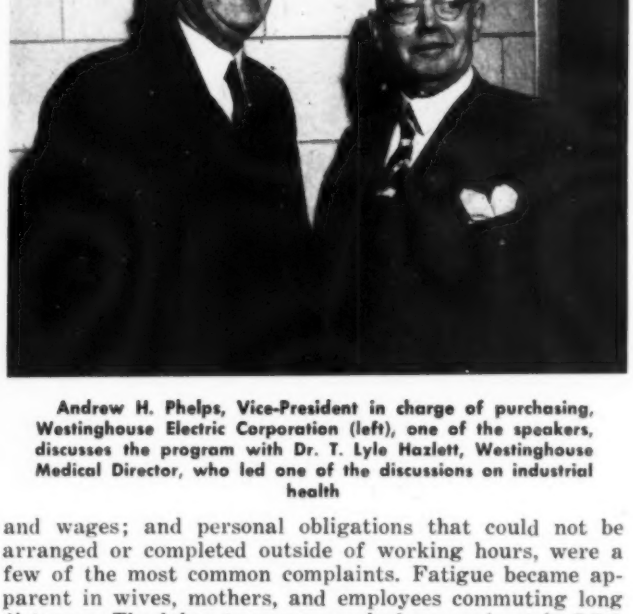
'The interiors of ships under construction have been heated during the winter months, using steam piped underground to the bow of the vessel, and then inside to electrically driven heat exchangers. This arrangement was made primarily to raise the temperature in the working places. It resulted in greater work output per man, less absenteeism and an improvement in the quality of welding.

'A part of our physical assets is many river towboats. Some of them operate out of harbor for comparatively long periods and encounter varying climatic conditions, since they travel from Pittsburgh to New Orleans. A crew member often considers a particular towboat his home, and everyone likes to be proud of his home. The quarters and work surroundings are made as attractive as practicable. The modern towboat has adequate provisions for heating and insulation, and arrangements for air circulation in the engine room, plenty of washroom facilities, lounge rooms equipped with radio, and running cold drinking water throughout the boat. Kitchen and refrigeration facilities are the best obtainable. Greater food variety is here provided than is perhaps to be found in the home. We like to insist upon cleanliness and good housekeeping aboard a vessel. A towboat upon which these things are practiced is, we find, apt to be in a good mechanical and physical condition, and it is much more likely to be a "happy ship."'

MAJOR JOHN M. STOCKTON presented "Putting Sick Absenteeism Data to Work, A.T.S.C. Civil Service Employees—1945."

The Air Technical Service Command civilian employees are a part of the service organization of the Army Air Forces. Large experimental stations, repair shops, supply depots, and personnel training schools are maintained, here and abroad, to service Air Corps equipment.

Sickness and injury absenteeism problems were prominent from the start, so a complete absenteeism record system was initiated to define the causes. Information gained from interviews with these sick absentees soon fitted into a pattern—ill-trained or not at all trained supervisory personnel; inadequate transportation, housing and wages; and personal obligations that could not be arranged or completed outside of working hours, were a few of the most common complaints. Fatigue became apparent in wives, mothers, and employees commuting long distances. The labor turnover reached approximately 7.5% a month during 1944, and that added inestimable amounts of work and expense through release of trained workers and the finding, employing, and training of new employees. Management and personnel departments were reminded by Industrial Medical Service that 63% of all A.T.S.C. employees took sick leave in the first six months of 1944 but only 12% took excessive leave. A large percent (approximately 60%) of total sick leave cases were not ill, but were under a serious disadvantage caused by conditions surrounding their work and personal life, and this was forcing them either to take advantage of Civil Service sick leave regulations or to sever relations with the Command. This condition eventually caused a well coordinated plan among all divisions to be instituted under the name of "Presenteeism Program." Every phase of employees' on the job and personal problems was investigated and organized action was taken to remove or alleviate conditions.



Andrew H. Phelps, Vice-President in charge of purchasing, Westinghouse Electric Corporation (left), one of the speakers, discusses the program with Dr. T. Lyle Hazlett, Westinghouse Medical Director, who led one of the discussions on industrial health

All medical absenteeism problems were handled through the industrial medical service, with its network of aid stations, centralized dispensaries and emergency hospitals. The personnel department, through interviews and investigations, screened other absenteeism cases for cause and developed remedies. Plant health and safety hazards were detected and corrected by industrial hygiene and safety personnel. Health education in plant and home health problems was also initiated.

This coordinated "presenteeism program" resulted in:

1. Trends on total rates for all absenteeism causes were steadily downward from January to October, 1945.
2. Respiratory diseases took a decided drop month by month.
3. Digestive diseases increased during the winter and early summer but have since dropped back.
4. A special program was devised for women, including authentic information on personal hygiene.
5. Industrial injuries, dermatoses and contagious diseases are definitely under control.
6. Short-term sickness and injury rates are believed to be too high, but they have stabilized during recent months.
7. The average annual disability rates for the A.T.S.C. compare favorably with pre-war industrial disability rates. A.T.S.C. employees claimed 10.6 days per year per employee. This is about the same as that paid for by industry which usually has less generous sick leave. This program probably saved the government millions of dollars.

Thursday Afternoon

MR. ANDREW H. PHELPS presented the subject "Role of the Purchasing Department in Industrial Health Maintenance."

'The purchasing function is a complex one, particularly with regard to the determination of what to buy. In a large company like Westinghouse with considerable specialization, many individuals must be consulted and their points of view reconciled. In a smaller company, however, you are quite likely to find that the individual who does the purchasing also passes judgment upon a number of other factors relating to the kind and quality of goods purchased which, in a large organization, would be handled by specialized personnel. He must act as his own lawyer and his own engineer and it is, therefore, important that he be competent to perform these functions satisfactorily enough to avoid making serious and embarrassing purchasing errors.

'What is the place of the purchasing department in maintaining a healthful working place? It seems to me that the immediate objective to be reached is that all legal requirements be observed in purchasing the materials and equipment used by the worker.

'First, we have the Federal regulations such as those governing the use of explosives and explosive material issued by the Bureau of Mines, and those put out by the Interstate Commerce Commission covering shipping container requirements for such materials as liquid gases and other dangerous materials.

'Second, we have the numerous state laws and regulations to be observed such as those governing Workmen's Compensation, factory inspection, and health.

'We also have to keep in mind the requirements of municipal ordinances regarding such matters as fire prevention or public health.

'In deciding what to buy, it seems to me that all purchased products relating to the health of the workplace can be divided into three general classes:

1. Those which are tested and approved by impartial and independent organizations whether public or private.
2. Those which are manufactured to standards such as those provided by the American Standards Association but which have not actually been tested and approved and carry no official seal of approval.
3. Those which conform to no standards and for which no tests have been made. In other words, those items to which the motto "caveat emptor" (let the buyer beware) particularly applies.

'There remains a large group of materials where the purchasing agent must depend on his own individual resources and those of his organization, since there is no official body to test and approve this class of materials nor are there any published standards upon which he can rely. This class includes such materials as hand soaps, hand creams, cutting oils which might produce unsuspected skin irritations, degreasing solvents of unknown composition, and paints which may contain poisonous materials. This class of material could perhaps be divided into two general groups, namely, those materials which are used for protection purposes and those which are used as production materials. In purchasing a protective type of material, the purchasing agent will, of course, make full use of past experience and, wherever possible, have sufficient tests made to be certain that the desired degree of protection is actually furnished by the material which he obtains. Where production materials are involved, the purchasing agent's responsibility lies mainly in the field of obtaining the exact type of material which has been specified by the engineering department or shop organization, and being certain that changes in quality or composition are not permitted without the approval of those persons who have specified them.

'Several years ago, one paint manufacturer began using a vegetable oil (cashew nut oil) in his paint formula, which had the irritating effect of the oil in poison ivy. This supplier used the oil to obtain certain desirable characteristics in his paint and overlooked the toxicity angle. Such errors are more rare now, but the need for alertness on the part of the buyer is not eliminated.

'After you have bought a satisfactory product it hardly seems necessary to add that it should be used in accordance with the manufacturer's instructions unless you have good reason to know they do not apply to you. Be sure that these instructions are passed on to everyone who might have occasion to use or come in contact with the material or product in question, and make a spot check from time to time to determine if they are being followed. After all, you can't blame the manufacturer for what happens if his product is used in a way never intended or if you neglect to follow the simple rules and precautions regarding its use which were furnished to you.

'Most small companies do not have the talent or facilities necessary for adequate testing of materials. It is then necessary in the case of the last group of materials mentioned for the purchasing department to rely upon organizations such as commercial and consulting laboratories as well as the state health department or organizations such as the Industrial Hygiene Foundation. The important thing to remember is that a specification is of little value uless the material being purchased is actually checked against its requirements.

'One of the most important purchasing functions is the maintenance of "vendor contact." Once it has been determined what is required, the purchasing department must advise the manufacturer accordingly. The manufacturer must then be kept acquainted with the performance of his product for, in this way, purchasing can influence greatly its manufacture, design or composition.

'Let us review the objectives which the purchasing department should try to achieve in helping to maintain a healthful work place. Those of you who have had experience with purchasing during the war and the requirements of the Army and Navy specifications know that nothing was too good for the man on the firing line. Westinghouse produced nearly 27,000,000 bug bombs for the armed services, not only to help prevent malaria and other insect-borne diseases, but to make the life of the soldier more comfortable and thus improve his morale and fighting efficiency. In exactly the same way, only the best is good enough if it contributes toward the health and safety of the worker in the shop. The purchasing department must do more than comply with legal requirements. To the extent that the products which we purchase are safe and pleasant for the workmen to use, we reduce grievances and improve company relations with the workers and with the union which may represent them. We reduce time lost for sickness and other forms of absenteeism which are the direct result of a dangerous, uncomfortable or unhealthful work place. We reduce the expense for Workmen's Compensation, an important factor today, when the trend is toward increasing liberality in this respect. Finally, we improve working conditions with resultant increase in efficiency and lowering of costs that makes it possible for us to be competitive and remain in business.'

MR. C. F. BURRIS discussed "The Place of the Foreman in Maintaining a Healthful Plant."

'Our company regards employees as its greatest business asset. There are no financial restrictions or limitations in so far as the health and welfare of workers are concerned.

'The I.B.M. factories are located geographically so that it is a physical impossibility for a comparatively small group of executives, to maintain in its entirety an effective industrial hygiene program. Therefore, departmental managers, or foremen as they are called in most plants, are made responsible for employee welfare. These keymen are selected carefully and each must possess good character, follow clean habits of living and present a neat appearance on the job. This definitely places at the head of a department a man who naturally expects clean, wholesome working conditions.

'The responsibilities of department managers are many. Among them, they must have a general knowledge of potential health hazards and their control. Each manager must understand that good housekeeping paves the way to healthful working conditions. He must be thoroughly

Professor Philip Drinker, of Harvard University, chats with Major G. S. Baldry, of the Canadian Army Medical Corps, during an intermission in the sessions

familiar with toxic solvents—he must recognize the danger of dusts and fumes which cause respiratory disturbances. He must know the composition of cutting oils and compounds and the protective creams used in connection with such coolants. He can also control, to a great extent, the spread of communicable diseases. When you consider that these requirements are in addition to his productive and personnel responsibilities, you can readily see why, we in I.B.M. like to call our foremen managers.

'It isn't necessary to point out that foremen need educational assistance in the field of industrial hygiene. They need the technical knowledge that you and I can supply—we need the practical knowledge they gain from experience. Through general managers' meetings, small group meetings, personal contact and constant follow-up by the safety department, our managers have gradually learned the value of industrial hygiene. We also welcome outside assistance. In this connection, we are grateful to the Foundation for the services of MR. HOLDEN who has visited our plants.

'About three years ago, there were several cases of dermatitis in one department where cutting oils were in use. The condition was discussed with the manager of that division and it was found that he had very little knowledge of the allergy of some people to various coolants. It was difficult for him to understand that it would be necessary to transfer some of his experienced employees to other jobs, for he realized the responsibility of training new employees to replace them. Management was in sympathy with him; however, good human relations are important in a successful business and the affected employees were placed on different jobs. The lack of knowledge in this case was not the manager's fault; we had not supplied him the tools with which to work. We immediately launched an educational program for all managers wherein dermatitis problems were thoroughly discussed, much emphasis being given to the control and prevention of this disease. The results of this program have been immeasurable. Since this time, we have had only a few minor dermatitis cases in our factories. We attribute this success to our managers.

'In 1943, an employee reported he had developed an internal disturbance through the inhalation of fumes. A thorough investigation indicated a remote possibility of this claim. We called on the Foundation to help us with this and similar ventilating problems. After recommendations were reviewed and considered, it was decided to launch an educational program in connection with air pollution. The causes and control of respiratory diseases were thoroughly explained and discussed with all managers. Many suggestions were received from them relative to such hazards, with the result that several ventilating systems have been incorporated in our plant operations. We have not had a respiratory claim in our plants during the past two years of operation.

'Only recently, a manager was contemplating the purchase of equipment to be used in connection with the operations of his department. It met with his approval in every way from a productive standpoint, but he suspected a health hazard. He immediately brought this to our attention and the manufacturer of the product was contacted. The vendor then recommended an exhaust system be used in connection with this installation. The fact that this equipment was to be placed in a very small room increased the danger of a health hazard. Here, again, the manager was instrumental in preventing a possible health hazard. These examples are typical of the health problems that are brought to our attention each day by our managers. We know the time spent providing them with a thorough knowledge of plant hygiene was not wasted.

'Mr. Charles F. Kettering once told members of the Foundation, "The better the working conditions, the better the mental attitude of the individual and, therefore, the better the work." That statement is a real challenge to those who still feel that industrial hygiene is a separate activity from production operations.

'The result of healthful working conditions is reflected in the percentage of labor turnover, the absentee rate and the cost of health and accident insurance. The labor turnover in our factories is less than 6%. Our absentee rate for the war years was 3% and, at the present time, it is 1.8%, one of the lowest rates, if not the lowest, for industry in the United States. I want to emphasize at this point, that no drives to control absenteeism were made. There has been no coercion to keep employees at work. The cost of maintaining our health and accident program has been 1.6% of total hourly payroll during the past 12 months of operation. We attribute these low rates to healthful conditions, for which our managers are largely responsible.'

MR. RODERIC OLZENDAN presented the final paper of this most interesting meeting, the subject being "The Comradeship of Production."

'Comradeship begins when one healthy man sets a goal for himself and realizes he can never reach it alone, but only if he teams up with another healthy man who has the same goal. I believe that continuous production would be the goal of every American if he thoroughly understood the fact that only when America attains the goal of continuous production can he himself have and hold the things he wants most for himself and his family.

'You and I know that the American idea is rooted in one dynamic fact—without continuous production, accompanied by widespread distribution, there can be no jobs, wages, dividends, taxes and products to distribute continuously.

'Only out of continuous production, flowing freely from American mills, mines, fields and forests, can each American citizen, able and willing to work, have a steady job, and get the largest measure of the security he wants, steadily. Only out of continuous production can every American consumer get variety, quality and quantity of products at a price he can afford to pay; only this way can every employee, manual and white-collared, draw the amount of wage and salary necessary to support a consistently improving standard of living; every stockholder count on a permanent and profitable investment for his savings; and government, which is all of us, derive taxes for national defense, taxes for education, and taxes for those public services which we have decided we can operate better, together through our government, than we can in any other way.

'We have never had enough jobs for all the American people, able and willing to work, over a period of years, except when we were at war. We have never had enough consumers with the burning desire and the adequate means to consume for any length of time, except when Uncle Sam was the over-all consumer. No nation has ever met this challenge continuously in peacetime. I believe that America can meet it, through what I have chosen to call "The Comradeship of Production."

'Certainly employees in American industry are *business associates*. On the average, there are $6,000 of invested savings, in the form of tools and equipment, behind every productive job in American industry. The business associates in American industry who receive their share of the output in the shape of wages, receive, after all bills are paid, the greater proportion of what is left. indeed, the hourly paid employees in American industry are the business associates of owners and management! They are not "hired hands"—not "workers"—not "employees"—not "labor." They are certainly not "wage slaves." Being a business associate, each should be received as such, and should come into the enterprise with a clear-cut idea of just how the job he is to do ties into every other job.

'No American flyer ever went out on a mission until he was first "briefed." With his flying associates, they sat together and to them was explained exactly what the objective was, how it was to be reached, which flyer was to go first, which last, what each was to do, when, and why. They never went out on a mission without first having such a clear and complete understanding of the target.

'Every enterprise, large and small, should have its briefing center. Such an orientation room will cost imagination, money, patience, and a powerful lot of hard and stimulating work with a permanent follow-through. It is not a department to be created carelessly in a burst of enthusiasm, and then allowed to get in a rut. It is too important for casual off-the-cuff action. It is the most dynamic part of the entire enterprise. Upon its success depends the success or failure of the enterprise to reach the target. If you believe, as I do, that it is the *attitude of mind* with which each associate tackles his job that counts most, then this briefing center becomes the generator which supplies power to every department.

'It must be demonstrated to the new business associate beyond any doubt that he is going to *do something* that really matters. He is not just another "worker," not just a cog in a gigantic machine. He is an individual American citizen, an associate in business who is going to have the opportunity to make *a contribution necessary and vital to production.*

'The individual is introduced to his foreman and to his immediate business associates. He is received as a comrade in production. Once every three months, thereafter, he again goes back to the briefing center and discusses his personal situation with the same man who helped start him off.

'A business associate may be a member of the CIO, the AFL, or an independent union, or of no organization. His right to choose is recognized, and his choice honored. In the comradeship of production it is just as much the business of the leaders of the union to see that the enterprise is successful, as it is that of the general manager. The responsibility of the one is equal to the responsibility of the other. If the enterprise is not productive and successful, then the business associates will not be successful. If they are not successful, then the union will have to go out of business.

'The foreman is the key man. He is in a position physically to know what his business associates are thinking. He is in a position to help formulate policies. He is clearly the man who carries out the policies eight hours of every day on the job—or he does not. The foreman or supervisor can do more to develop, maintain and strengthen the comradeship of production than any other individual.

'We search to find the best men. We are proud when they rise to the very top, because we picked them. The share of wages received by business associates in the comradeship of production is bound to be sufficient to sustain a standard of living which can be called, with pride, American. The individual himself produces such wages.

'Adding up: You know from experience that discord leads to conflict; conflict multiplied breeds chaos; and chaos in utter confusion calls out for dictatorship. And Americans want none of that! On the other hand, the comradeship of production *can* reduce suspicion to a minimum and generate individual understanding. Individual understanding multiplied equals teamwork, and teamwork makes goals in any man's game—goals in the making of which every member has a personal and very vital interest.

'Comradeship in production is new, natural, inspiring *and attainable.* If reliable men like you all over American industry, commerce and agriculture will talk repeatedly about these ideas, will carry them out in enterprises 24 hours a day in such a way that *nobody can possibly misunderstand them*, we can, all of us together, have continuous production because we are united in the self-interest of each one of us.

'As one American citizen to another, I invite you to become charter members of the new North American Order—the Comradeship of Production.'

On the Use of Radioactive Tracers in Industrial Medicine

SIMEON T. CANTRIL, M.D.,
Assistant Superintendent, Industrial Medicine,
Hanford Engineer Works,
Richland, Washington

CONTINUED security regulations do not permit a detailed description of methods now in practice on a large scale to prevent exposure of personnel to radiation or radioactive substances. It is not premature, however, at this time to evaluate the possible future application of present methods in certain phases of industrial hygiene to fields unrelated to atomic energy.

It would seem that a judicious adaptation, using radioactive tracers, could be extremely valuable in preventing exposure to non-radioactive noxious agents.

A radioactive tracer may be defined as small quantity (micrograms) of a particular radioactive isotope which is used to trace or tag the chemical flow or metabolic pattern in a chemical or physiologic process. The method is not new, and was used in various fields prior to the work on atomic energy. The value of the method lies in the ease with which the tagged or tracer isotope can be distinguished in analyzing the process at any point. In many instances it is simpler to detect the presence and quantity of an element by its radioactivity than by more laborious chemical analytic procedures. Thus the study of iodine metabolism has been advanced by using a small amount of the radioactive isotope (I^{131}) along with the non-radioactive isotope (I^{127}). Numerous other examples could be cited in the field of physiology. In industry, the control of exposure of radium dial painters to radium has utilized the radioactive properties of the noxious agents in measuring the quantities of contamination on benches, floors, hands, etc., or in the air. With radium it was possible as well to measure the amount deposited in the body of a worker by measuring the radioactive content of the expired air—which was a measure of the radon liberated by the radium in the body and excreted via the lungs. Since the permissible level of radon content in the air under working conditions is 1×10^{-14} curies per cc. of air, it can be readily seen that such methods can be accurate down to low levels of contamination. The success achieved in preventing exposure of personnel to harmful amounts of radioactive substances encountered in industry is, in a large measure, due to the fact that the substances dangerous to health can be accurately and readily measured by instruments, so that one need not be in doubt concerning the degree of radioactive contamination of working locations, air, hands or clothing of workers. Control is thus facilitated by the property peculiar to the vast majority of the toxic agents which have to be handled. With little imagination, one experienced in industrial hygiene can see the possibilities of applying these technics to occupa-

tional hazards unrelated to the field of radioactive materials.

Possible examples of its application can best illustrate its potentialities.

Gehrmann reports that approximately 4.5% of workers in the field of aniline dyes develop papillomata of the bladder. About one-half of these go on to cancer of the bladder. The substances responsible for this chain of events enter the body by either skin absorption or inhalation. Successful control methods in present use in the aniline industry hinge on the attainment of non-toxic amounts in the air and freedom from skin contamination. This requires not only effective engineering to prevent contamination, but also continuous operation of a reliable detector of the carcinogenitic products outside containers. From knowledge already gained, a radiochemist, in conjunction with a group familiar with the physiology, toxicology, and also detection of radioactive substances, could find a radioactive tracer to incorporate in the production process which would readily permit measurement of the escape of the tracer from the desired confines in the process, or its contamination of working locations and personnel. The quantity of tracer detected would be in a specified ratio to aniline or its by-products. A tracer could be found which by virtue of its radiations, half-line (the time over which it retains its radioactivity) and metabolic properties would be far less toxic than the carcinogenitic products.

One could then be certain that the working rooms and air were below tolerance concentration, and that the clothing and skin of workers were free from harmful substances. Similar methods with far more dangerous agents have been utilized already in large-scale industry, and with results which have been worth many times the effort entailed. One could multiply this one example by many, whether in the field of manufacture of TNT, tetryl, photographic reagents, mercury, lead, arsenic, the benzols, etc. The list is long when one stops to consider the potential application of the method of industrial health and protection.

Whatever the application, the requirements for the adaptation of the method will require careful control. One must be informed as to the potential dangers of radioactive substances, and be certain he is not substituting a radioactive toxin for a non-radioactive one. This can be controlled, but, in each adaptation, it will be necessary to fulfill the following tenets:

1. A thorough study of the industrial hygienic problem under consideration from the standpoint of engineering, chemistry, toxicology, and protection.

2. The use of a radioactive tracer which will not interfere with the process, and at the same time be non-toxic in the maximum amounts which might be present to affect personnel. This presupposes too that the escape of the initial toxic agent will be in a definite ratio to the tracer. In some instances, it will be possible to use radioactive isotopes of certain elements which are chemically bound to the process, and would come away only with the toxic agent in question. In other operations, it may be desirable to use a tracer with a certain volatility differing from the toxic agent, and to measure the escape of the tracer only, apart from the noxious agent in question.

3. It will be necessary to carry on the control by those trained in the detection of radioactive substances under occupational exposure, and who are familiar with the permissible limits of exposure to both the radioactive tracer and the toxic agent of whose presence it warns. The problem of instrumentation and detection can be readily handled by those familiar with the problems of radiation protection. The assaying of the relative toxicity of radioactive substances, and the establishing of permissible levels is a problem which has been met heretofore, but in each application, further investigation by those familiar with the technics may be necessary.

To carry the possibilities of the use of radioactive tracers still further, consider again the question of aniline workers and the damage to the bladder. Since the toxic substance is excreted via the kidneys, causing injury to the bladder, the quantity so excreted in the urine can be detected by measurement of the radioactive tracer excreted with the offending aniline by-product.

Once a method is devised for this detection in urine, free from outside contamination, routine urinalysis on workers becomes a further check on the efficacy of the protection program in force. With other agents one may have to analyze the blood or stools, or possibly expired air. In any case, the quantities detectable are small in comparison with present methods of clinical laboratory analysis, and at the same time both more reliable and easier of attainment.

In looking to the future, the use of radioactive tracers could in a sense revolutionize our attainment of safe working conditions, but not change the concept of industrial hygiene, which is prevention of exposure.

MAJOR JOHN L. FERRY, of Whiting, Indiana, was head of the Division of Industrial Medicine for the Medical Section of the Manhattan Engineer District, the Army organization which supervised the production of the atomic bomb. MAJOR FERRY entered active duty as a captain on March 17, 1943, with the 32nd General Hospital, but was transferred on April 30, 1943, to the New York office of the Manhattan District. He was made assistant to the chief of the Medical Section, an organization which grew in time to include 89 Medical Department officers, and was placed in charge of the industrial activities of the section, supervising an industrial hygiene program designed to protect the health of approximately 50,000 workmen. Production of the atomic bomb required work with little-known radioactive substances on a vast scale and necessitated careful supervision of both research and production workers. MAJOR FERRY acted as consultant in industrial hygiene to manufacturers processing uranium and other special materials used. He instituted and supervised a laboratory of industrial hygiene to perform the special tests required by the unusual nature of the operations. In addition he acted as liaison officer to a large medical research organization, to acquaint the scientists with the requirements of the industrial activities and to keep the contractors supplied with the most recent toxicity data. MAJOR FERRY acted as consultant in writing a series of bulletins on safe-handling practices for special chemicals during the time he was stationed in New York. On July 15, 1944, he was transferred to Oak Ridge, headquarters of the Manhattan District, and, while continuing to function in the above-mentioned activities, he also supervised the industrial medical programs of the gas and thermal diffusion and the electromagnetic processes for the concentration of uranium 235. During the absence of COLONEL STRAFFORD L. WARREN, chief of the Medical Section, to investigate the effects of atomic bombing in Japan, MAJOR FERRY was appointed acting chief of the Medical Section. In a recent press release he was listed with 45 other officers, among the several hundred assigned to the project, as one of the officers "who have made exemplary contributions to the success of the project."

From the *Journal of the Indiana State Medical Association*, January, 1946.

INDUSTRIAL HEALTH CONFERENCE

—American Association of Industrial Physicians and Surgeons; American Industrial Hygiene Association; National Conference of Governmental Industrial Hygienists; American Association of Industrial Nurses; American Association of Industrial Dentists; Chicago, April 8-13, 1946—

TENTATIVE PROGRAM

National Conference of Governmental Industrial Hygienists

Sunday, April 7

NATIONAL CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS: Three concurrent sessions—all day—on informal discussion of problems for:

(a) Medical Officers.
(b) Nursing Consultants.
(c) Engineers and Chemists.

Monday, April 8

DEVELOPMENT of Small Plant Health Programs."

"Administrative Aspects of Mass Radiography."

"Expansion of Industrial Hygiene Programs in Official Agencies."

"Toxicology of Newer Metals."

"Health Services for Official Agencies at the State Level."

"Decentralization of Official Industrial Hygiene Activities."

"Legal Responsibilities of Health Departments in Industrial Hygiene."

"Coordination of Official Industrial Hygiene Program with Other Agencies."

Tuesday, April 9

ENTIRE morning devoted to reports from some 10 standing committees.

American Industrial Hygiene Association

April 8, 1946

AMERICAN INDUSTRIAL HYGIENE ASSOCIATION, Dinner Meeting, 6.00 P.M.: Round-table discussion on toxicology—methods of conducting research, application to industrial hygiene, and role of AMERICAN INDUSTRIAL HYGIENE ASSOCIATION in setting up standards of environmental control. (Admission by prior reservation only.) —D. D. IRISH, Chairman and Discussion Leader.

April 9, 1946

REGISTRATION. AMERICAN INDUSTRIAL HYGIENE ASSOCIATION Local Sections Council Luncheon, 1:30 P.M.

AMERICAN INDUSTRIAL HYGIENE ASSOCIATION Section on Analytical Chemistry:

"Use of Polarograph in Industrial Hygiene Analytical Chemistry"—F. H. GOLDMAN and IRVING MAY.

"Methods of Determination of Free Silica"—T. M. DURKAN.

"Determining the Concentration of Mercury in the Air" —E. C. BARNES.

"New Developments in Commercial Instruments for Air Analysis"—W. P. YANT.

"The Determination of Antimony in Biological Material"—DONALD HUBBARD.

AMERICAN INDUSTRIAL HYGIENE ASSOCIATION Section on Industrial Environmental Control:

"Dust Control in Hematite Mines"—B. D. TEBBINS.

"Industrial Hygiene in the Construction Industry"—F. N. CHIRICO.

"The Control of Mercury Vapor Hazards in Laboratories"—H. E. SEIFERT.

"The Control of Lead Exposures in Storage Battery Manufacturing"—G. S. WINN.

"Urinary Fluorine Excretion, and the Control of Exposures in Alkylation Plants Using the Hydrogen Fluoride Process"—E. J. LARGENT.

"The Inter-Relationships Between Man, His Environment and Tasks"—WILLARD MACHLE.

April 10, 1946

JOINT session of AMERICAN INDUSTRIAL HYGIENE ASSOCIATION and AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS. Welcoming addresses and response. AMERICAN INDUSTRIAL HYGIENE ASSOCIATION business meeting.

AMERICAN INDUSTRIAL HYGIENE ASSOCIATION LUNCHEON, 12:00 Noon. DONALD CUMMINGS Memorial Lecture—W. P. YANT.

AFTERNOON: Joint Session AMERICAN INDUSTRIAL HYGIENE ASSOCIATION and AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS—(Program to be announced later.)

April 11, 1946

AMERICAN INDUSTRIAL HYGIENE ASSOCIATION Section on Physiology and Evaluation of the Environment:

"Respiratory Air Flow Characteristics and Their Relation to Certain Lung Conditions"—L. SILVERMAN.

"The Effects of Thiamine Restriction and Deficiency on Behavior in Normal Young Men"—JOSEF BROZEK.

"Quinone Vapors and Their Harmful Effects":

"Corneal and Conjunctival Injury"— F. L. OGLESBY, BANKS ANDERSON and J. H. STERNER.

"Plant Exposures Associated with Eye Injuries"—F. L. OGLESBY and J. H. STERNER.

"Appraising Exposures to Silica and Dust and other Harmful Materials"—FRANK HOLDEN.

"A Study of the Efficiency of Methods for Obtaining Vapor Samples in Air"—H. L. ANDREWS, S. C. PETERSON and WILLIAM C. WHITE.

AMERICAN INDUSTRIAL HYGIENE ASSOCIATION Section on Toxicology:

"Toxicology and Potential Dangers of Ethylene Dichloride"—L. A. HEPPEL.

"Volatile Hydrides of Toxicological Importance"—F. H. WEBSTER.

"The Toxicity of Some Materials Used in the Manufacture of Cemented Tungsten Carbide Tools"—WILLIAM G. FREDRICK and WILLIAM R. BRADLEY.

"Physiological Effects of the Vapors of Xylidene Upon Experimental Animals"—J. F. TREON.

"The Acute and Chronic Toxicity of Methyl Chloride in Laboratory Animals"—W. W. SMITH.

"The Appraisal and Potential Dangers of Petroleum Solvents with Special Reference to Particle Size"—J. L. SVIRBELY.

AFTERNOON SESSION: "The Effect of Portland Cement Dust on Susceptibility of Lobar Pneumonia"—ANNA BAETJER.

"Further Observations on the Ingestion of Lead by Normal Human Subjects"—R. A. KEHOE.

"Dispersion and Control of Triethylene Glycol Vapors for Aerial Disinfection"—T. T. PUCK and A. L. CHANEY.

American Association of Industrial Physicians and Surgeons

Tuesday, April 9

AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, Clinical Program, Surgical Amphitheatre, Cook County Hospital, 9:00 A.M. to 12 NOON:

"Blood Bank Organization"—H. L. WALLIN, M.D., and FREDERICK STEIGMANN, M.D.

"Suture Material: Early Ambulation: Postoperative Treatment: Thyrothricin"—D. D. KOZOLL, M.D.

"Abdominal Visceral Injuries"—R. W. MCNEALY, M.D.

"Burns"—SUMNER KOCH, M.D., and HARVEY ALLEN, M.D.

"Fractures"—JAMES J. CALLAHAN, M.D.

"Varicose Veins and Varicose Ulcers: Thrombophlebitis: Femoral Vein Ligation"—ARKELL VAUGHAN, M.D.

"Head Injuries"—HAROLD VORIS, M.D.

Board Meeting, AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS.

Wednesday, April 10

THE Industrial Relations Value of a Medical Department"—CHRISTOPHER LEGGO, M.D.

"Men, Materials, Machines and Manpower in the Reconversion Period"—MILTON H. KRONENBERG, M.D.

"The Dental Relations of an Industrial Health Program."

JOINT Meeting with AMERICAN INDUSTRIAL HYGIENE ASSOCIATION—Afternoon Session.

Program to be announced later.

Thursday, April 11

PRESENT Status of Aluminum in Silicosis":

(a) "Laboratory and Research"—DUDLEY IRWIN, M.D., Medical Director, Aluminum Corporation of America.

(b) "Clinical Aspects"—J. W. HANNON, M.D., Washington, Pennsylvania.

"Industrial Chest Conditions Other Than Silica"—L. E. HAMLIN, M.D., Medical Director, American Brake Shoe.

"Employability of the Cardiac"—C. C. MAHER, M.D., Northwestern University.

"Present Status of Penicillin and the Newer Anti-Biotics"—WALTER S. PRIEST, M.D.

"Ocular Effects of Radiant Energy"—CHARLES F. KUTSCHER, M.D., Pittsburgh, Pennsylvania.

"Hand Surgery"—MICHAEL MASON, M.D.

"Early Closure of Chronic Osteomyelitis with Split Thickness Skin Grafts"—MAJOR FRED C. REYNOLDS, MC, and CAPTAIN CHARLES E. STEBBINS, MC, Gardiner General Army Hospital, Chicago.

Banquet.

American Association of Industrial Dentists

Wednesday, April 10

AMERICAN ASSOCIATION OF INDUSTRIAL DENTISTS:

"A SURVEY of Industrial Dentistry in the Commonwealth of Pennsylvania"—EDWARD R. ASTON, D.D.S.

"The Etiology of Dental Sequelae"—C. O. SAPPINGTON, M.D., DR. P.H.

"Dental Program at the Philadelphia Company"—CHARLES R. FRICKE, D.D.S. (Discussion—ERNEST GOLDHORN, D.D.S.)

"A Functioning Dental Service at the Wilson Dam Health and Safety Department, T.V.A."—VARON B. SMITH, D.D.S. (Discussion—VERNON J. FORNEY, D.D.S.)

Thursday, April 11

ROUND-TABLE Discussion—"The Responsibility of the Operating Dentist in Industrial Cases"—Leader: EARLE H. THOMAS, M.D., D.D.S.

"The Dental Unit of the Industrial Hygiene Division, U.S.P.H.S."—LYMAN D. HEACOCK, D.D.S., M.P.H.

Banquet.

American Association of Industrial Nurses

Friday, April 12

AMERICAN ASSOCIATION OF INDUSTRIAL NURSES: Joint Session with AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS:

"Team Work in an Industrial Health Program"—(Speakers to be chosen by the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS).

Saturday, April 13

AMERICAN ASSOCIATION OF INDUSTRIAL NURSES: Business Meeting.

Luncheon Meeting.

Round-Table Discussion:

(a) "Preventive Tuberculosis Program in Industry"—JULIE MIALE, National Tuberculosis Association.

(b) "The Industrial Nurse and Personnel Relations"—LUELLA THOMPSON, General Mills Corporation, Minneapolis, Minnesota.

(c) "What Can the Local Group Do to Stimulate the Interest of the Industrial Nurse to Further Her Education?"—Representative from Houston, Texas Industrial Nurses' Club.

A.A.I.N. Banquet: "How to Promote Expansion of Health Services in Industry"—(An Executive from Industry).

Sunday, April 14

DISCUSSION: "Problems of the Industrial Nurse"—(Discussion Panel will include: Industrial Physician, Industrial Nurse, Executive from Industry, Industrial Relations Director, Safety Engineer, Chief, Division of Industrial Hygiene, Illinois Department of Public Health, Council of Social Agencies).

Application for Hotel Accommodations

—Conference on Industrial Health—
April 8-13, 1946
Hotel Sherman, Chicago

FOR convenience in making hotel reservations for the Conference on Industrial Health to be held in Chicago, April 8-13, 1946, Hotel Sherman, hotel rates are listed below. Whenever possible, arrangements should be made for occupancy of rooms accommodating two persons; only a limited number of single rooms are available. All reservations are to be cleared through Housing Bureau, American Association of Industrial Physicians and Surgeons, Room 1300, 28 E. Jackson Blvd., Chicago 4, Illinois. Because of the great congestion that prevails and the difficulty that will continue to prevail in securing hotel accommodations, ALL REQUESTS FOR RESERVATIONS MUST GIVE DEFINITE DATE AND APPROXIMATE HOUR OF ARRIVAL, ALSO PROBABLE DATE AND APPROXIMATE HOUR OF DEPARTURE, AS WELL AS NAMES AND ADDRESSES OF ALL PERSONS WHO WILL OCCUPY RESERVATIONS REQUESTED. Use the form below for your convenience in supplying the necessary data. Make your reservations early!

HOTEL SHERMAN RATES	For one person	For two persons: Double bed	For two persons: Twin beds	Suites
It is anticipated that there will be sufficient rooms available at the Sherman to accommodate the Governmental Industrial Hygienists, the American Industrial Hygiene Assn., the American Assn. of Industrial Dentists and the American Assn. of Industrial Physicians and Surgeons.	$2.75 3.30 3.85 4.40 5.50	$4.40 4.95 5.50 6.60 7.70	$4.95 5.50 6.60 7.70 8.80	$8.80 11.00 13.20 16.50 and up.
CONGRESS HOTEL RATES Special arrangements have been made to accommodate the American Association of Industrial Nurses at the Congress Hotel.	$4.00 4.50 5.00	$6.00 7.00 8.00	$6.00 7.00 8.00	

(Above hotel rates are not guaranteed but are subject to change).

Housing Bureau, American Assn. of Industrial Physicians and Surgeons
Room 1300—28 East Jackson Boulevard
Chicago 4, Illinois

Please reserve the following accommodations for the 1946 convention—April 8-13, 1946. (The name of each hotel guest must be listed below).

Single Room____ Double Bedded Room____ Twin Bedded Room____ Suite____.

Rate: From $____ to $____.

Arriving at hotel: Date____ Hour____

A.M.____ P.M.____ Leaving Date____

Names and Addresses of all persons for whom you are requesting reservations:

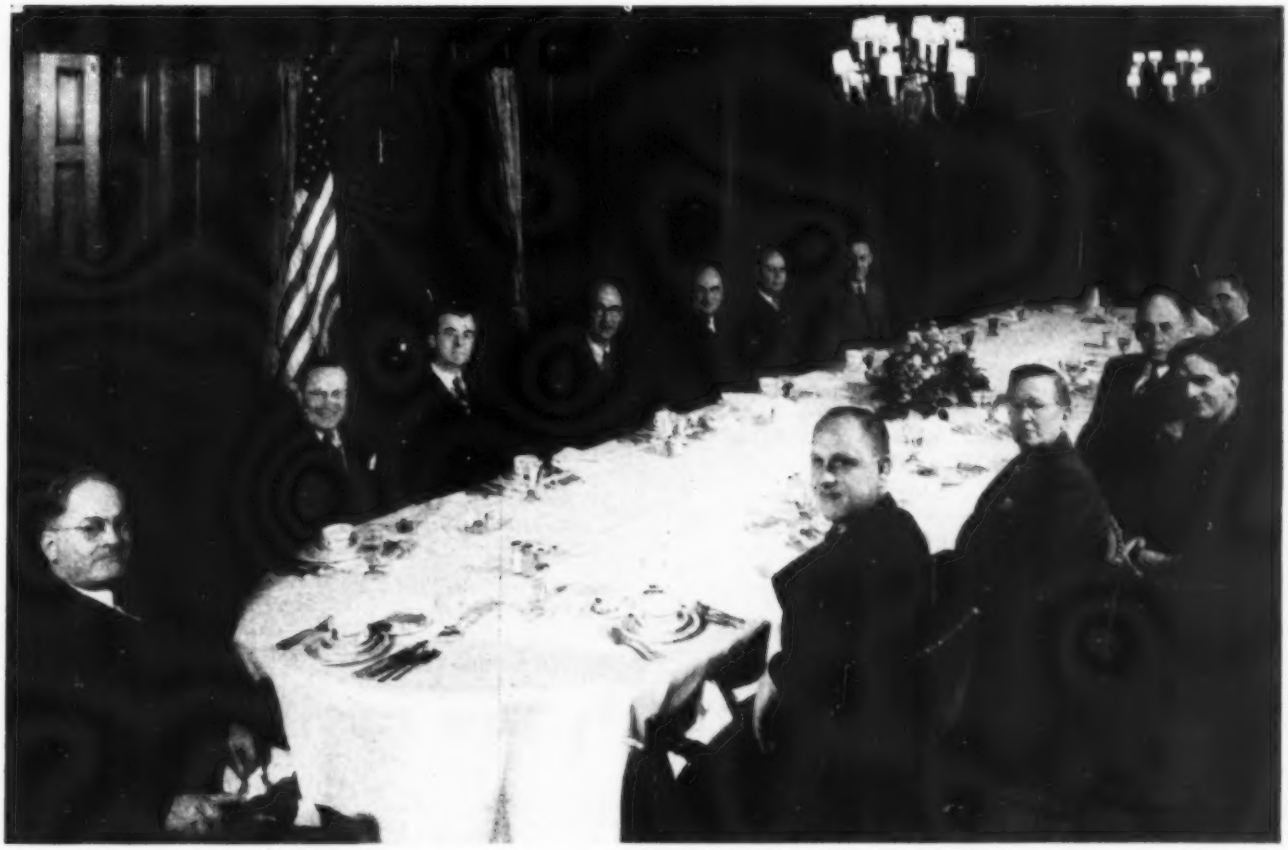
_____ _____

_____ _____

(Signed)_____

Address_____

City and State_____ Zone____



Dr. C. O. Sappington (left foreground). At Dr. Sappington's left: Stephen G. Halos, Warren A. Cook, Dr. Donald Hunter, Dr. C. T. Olson, Dr. E. C. Holmblad, and Dr. Frederick W. Slobe. At Dr. Sappington's right: Dr. Carl M. Peterson, Dr. Joseph Chivers, Dr. Richard Schilling, Dr. Carey P. McCord, and Dr. Charles Drueck.

Distinguished English Doctors Visit United States

DURING October, November and December, 1945, DR. DONALD HUNTER, Director of the Department for Research in Industrial Medicine of the Medical Research Council of Great Britain, and DR. R. S. F. SCHILLING, Secretary, Industrial Health Research Board of the Medical Research Council, toured the United States to investigate industrial health research and industrial medical practice on this side of the water. Plans called for visiting some of the most important industrial centers and industrial medical developments throughout the country. A summary of the itinerary, with some of the persons contacted, follows:

Washington, D. C.—DR. JAMES TOWNSEND and associates; MR. VERNE ZIMMER; representatives of the American Federation of Labor and the Congress of Industrial Organizations.

Baltimore (Johns Hopkins University)—DR. ANNA BOETGER; MR. ABEL WOLMAN; DR. FRED J. WAMPLER; DR. WILLIAM J. FULTON; DR. JOHN MCDONALD.

Wilmington—DR. JOHN H. FOULGER; DR. ALLAN J. FLEMING; DR. GEORGE H. GEHRMANN.

New York City—DR. LEONARD GREENBURG and associates; DR. A. J. LANZA and associates; DR. NATHAN MILLMAN.

Pittsburgh—DR. WILLIAM P. YANT and associates; DR. T. LYLE HAZLETT and associates; MR. JOHN MCMAHON and associates.

Rochester, New York—DR. WILLIAM A. SAWYER; DR. WM. S. MCCANN; DR. NOLAN L. KALTREIDER.

Saranac Lake, New York—DR. LEROY U. GARDNER; DR. GEORGE WRIGHT and associates.

Montreal, Canada — Officials of the Manhattan Project.

Toronto, Canada—DR. J. G. CUNNINGHAM and associates.

Detroit—DR. C. D. SELBY; DR. RAYMOND HUSSEY; DR. HARLEY L. KRIEGER.

Chicago—DR. CARL M. PETERSON; DR. C. O. SAPPINGTON; MR. WARREN COOK; DR. JOSEPH CHIVERS; DR. HAROLD EARNHEART; DR. RICHARD BENNETT; DR. ROBERT WATROUS.

Rochester, Minnesota—DR. DONALD BALFOUR and DR. WALTER ALVAREZ, and physicians and surgeons of the Mayo Clinic, also DR. HENRY W. MEYERDING.

Seattle—DR. L. M. FARNER and associates.

Portland—DR. C. M. MCGILL and associates.

San Francisco—DR. ROBERT LEGGE; DR. WALTER BROWN and associates; DR. HAROLD C. CASTBERG and associates; DR. RAY LYMAN WILBUR and DR. DONALD TRESSITER; MR. CHARLES K. FIELD; MR. BERT HANMAN; DR. JEAN S. FELTON; DR. HENRY H. KESSLER.

Boston — PROFESSOR PHILIP DRINKER and associates at the Harvard School of Public Health.

THE Chicago visit of DR. HUNTER and DR. SCHILLING included inspections of the industrial medical facilities in steel manufacture, with DR. RICHARD BENNETT, Chief Surgeon, Carnegie-Illinois Steel Corporation; in the packing industry, with DR. HAROLD EARNHEART, Medical Director, Swift & Company; and in the making of pharmaceuticals, with DR. ROBERT WATROUS, Plant Physician, Abbott Laboratories. A feature of the Detroit visit is described in the item "International Conference" (page 10). Sequel of this "conference" was the suggesting of a formal International Industrial Health Conference in London, in 1947.

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Volume 15 JANUARY, 1946 Number 1

1946 Conference on Industrial Health

THE five professional organizations which are actively engaged in industrial health activities will hold their ANNUAL CONFERENCE ON INDUSTRIAL HEALTH at Chicago, April 8-13, 1946. These associations are (1) AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS (Thirty-first Annual Meeting); (2) AMERICAN ASSOCIATION OF INDUSTRIAL NURSES (Fourth Annual Meeting; (3) AMERICAN INDUSTRIAL HYGIENE ASSOCIATION (Seventh Annual Meeting); (4) NATIONAL CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (Eighth Annual Meeting); (5) AMERICAN ASSOCIATION OF INDUSTRIAL DENTISTS (Third Annual Meeting). Tentative Program on page 39. The headquarters of the Conference will be at the Hotel Sherman.

Propaganda

FEW PEOPLE outside of an editorial office have any idea of the vast amount of printed and mimeographed matter that is received by publications and newspapers throughout the country from government agencies. It is a dull day when one or more of these things doesn't turn up in every mail delivery. A little of this agency and bureau material is useful, but most of it goes into the waste basket. Significant lately is the increasing proportion of this kind of stuff which is sheer propaganda. The latest propaganda is by way of a copy of the President's message to Congress on his compulsory health insurance proposal. This came as H. R. Document 380 in the usual government envelope, free of postage, and labeled "Official Business." We are not any more impressed by the form and manner in which this was sent us than we were by the message and its contents at the time it was delivered and reported in the newspapers. On the contrary, we would like to suggest to readers who are writing their Congressmen that they urge the following: In view of the facts (1) that all such administration propaganda costs money; (2) that *all this money is taxpayers' money;* and (3) that the purpose of all such propaganda is to influence voters (including taxpayers) in favor of an administration proposal of one kind or another, we now petition Congress to make, as to each such send-out, *an equal appropriation of taxpayers' money* for the purpose of presenting to the voters, in the same manner as the government does, the other side of the picture by way of objections to the measure proposed. Further, all presentations of the other, or "anti" side of an administration measure to go to the same list, and with the same kind of franked postage, that the government bureaus and agencies use to present the "pro" side. An illustration of this would be an appropriation by Congress to enable the American Medical Association to oppose the Wagner-Dingell bill—this appropriation to be big enough to match the administration propaganda in every respect of mailing pieces, newspaper advertisements, paid speeches, radio time and everything else necessary to acquaint the American people with the objections to the bill as fully, freely and effectively as its proponents are using government agencies at taxpayers' expense in the effort to persuade their approval. Either this, or stop the propaganda altogether by an enactment to prevent, under penalty, the use by any and all government agencies and bureaus of any taxpayers' money for any purpose of influencing public opinion.

The Industrial Physician

DR. HOLMBLAD'S recent article, "Certification of Physicians and Surgeons in Industry" (INDUSTRIAL MEDICINE, 14:11, 921, November, 1945*) highlights a subject which is due to command increasing attention. This for two reasons. One is the certification itself, which is desirable from every standpoint of professional consideration. The other is inherent in the tendency now apparent—with industrial medicine fully recognized within and without the profession—for "everybody," as the radio comedian says, to be "tryin' to get into the act." Those who *are* industrial physicians—the medical directors, chiefs of medical service, plant physicians, and industrial medical consultants who are grounded in plant experience—*know* who they are. But New York State has a compensation law requirement under which any physician who complies with it is entitled, and licensed, to practice "industrial medicine." And there, and elsewhere, the practitioner who believes he can ascribe his patient's illness to his occupation because that is where he works, will not be unmindful of whatever advantage he may think he can obtain by calling himself an "industrial physician." Further, as we have been unpleasantly reminded from time to time, even some osteopaths are so styling themselves. Of course, no particular harm need be done by this; and even a comment on it may seem trivial. But the fact remains that by no means every doctor who treats or prescribes for a patient appearing in his office in overalls becomes thereby an "industrial physician." Those who will be entitled to the distinction of certification had to earn and did earn that distinction *in industry*. Certification will properly identify them.

*Reprinted from the Industrial Health Number of *The Journal of the Indiana State Medical Association*, 38:10, 428-429, October, 1945.

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ABOUT THESE CONVENIENT NEW FORMS OF PENICILLIN?

TABLETS PENICILLIN CALCIUM SQUIBB are individually and hermetically sealed in aluminum foil to prevent deterioration from moisture. Hence physicians can prescribe precisely the number needed without fear of potency loss. Penicillin-destructive gastric juices are buffered by 0.5 gm. of trisodium citrate in each tablet. Tablets Penicillin Calcium Squibb provide 20,000 units, making oral therapy feasible for many conditions which heretofore could be treated only by repeated parenteral injections.

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20,000 units penicillin calcium in a flavored paraffin base, each troche individually wrapped. Box of 6.

TOPICILLIN OINTMENT
General purpose ointment containing 1,000 units penicillin calcium per gram in a base of petrolatum, anhydrous lanolin, beeswax and peanut oil. Tube of 14.5 Gm. (½ oz.)

TOPICILLIN OINTMENT OPHTHALMIC
1,000 units penicillin calcium per gram in a base similar to general purpose ointment, but with consistency adjusted to ophthalmic use. Tube of 3.6 Gm. (⅛ oz.)

DELACILLIN
Penicillin calcium in peanut oil with beeswax, 300,000 units per cc. 1-cc. and 10-cc. vials.

SQUIBB *Penicillin Products*

MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858

INDUSTRIAL HEALTH and DISEASE

'How I Got into Industrial Practice And What I Think of It'

—Six doctors in different parts of the country tell of their careers—

THINKING about entering industrial medicine, full-time or part-time? Many men are, and they have asked the editors such questions as these: How can I find an opening? Should I work on a definite schedule in the plant or on call in my own office? What about compensation? Will industrial work help me build a private practice? How will I stand with my colleagues, my medical society? Will the work slow up my professional development or accelerate it? To find the answers, MEDICAL ECONOMICS interviewed six representative industrial physicians, asking them to tell about their work in their own way. Here are their comments:

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I'VE BEEN a general practitioner here in Wisconsin for some years. Before the war I was interested in doing part-time industrial work, but there seemed to be few desirable openings. After Pearl Harbor I was offered a part-time connection with a factory that had converted to war work. I agreed to go there for an hour every working day; salary was to be $100 a month.

"Actually, an hour a day never proved sufficient when production was at its height. Nurses were able to take care of most first-aid work, but a great many employees—mostly women—insisted on seeing the doctor no matter how slight their indisposition or injury. (From the beginning, the company permitted employees to visit me at the plant for treatment of complaints not connected with their work.) In time new patients began to trickle into my private practice, and I learned that many came on the recommendation of friends whom I had treated in the factory. Meanwhile, the company had arranged for its employees to see me privately for treatment of non-industrial disorders. It now contributes $2 toward my fee for each such visit and also contributes toward the cost of surgical and maternity care (but does not provide hospitalization). All in all, this arrangement has worked well for me; about 15% of my present private patients are factory employees and their families. My industrial work does not interfere with my general practice because three other physicians who are co-tenants with me in a five-room suite take care of my emergency calls when I am at the factory. I return the favor by pinch-hitting for them. One of the men has a factory arrangement similar to mine. Now in my late 40's, I often wonder why I did not make more of an effort to supplement my income by industrial work years ago."

AFTER graduation from medical school in 1911, I took a post-graduate course in ear, nose, and throat in Vienna. Since then I have specialized in ENT and, more recently, in plastic surgery. Several years ago the president of an industrial concern near New York City—a personal friend of mine—asked if I would give pre-employment health examinations for his company on a part-time basis. I did this work up until 1944 when the U. S. Public Health Service suggested to the company that it should have a real medical department. The president agreed, whereupon a suite (waiting room, examining room, and dispensary) was equipped for the purpose. I now devote two hours a day, four afternoons a week, to this industrial job, for which I'm paid at the rate of $10 an hour. Because there is a full-time nurse in attendance, I can arrange the factory schedule to suit my private

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INDUSTRIAL WORKERS

Early discovery, and immediate and effective control, are important in the treatment of Pediculosis among industrial workers. Unless proper steps are taken, a single case of Pediculosis may lead to infestation of other employees.

Cuprex is a valuable aid to the industrial physician who bears the responsibility of having to discover and check any condition which may impair the efficiency of the workers under his care.

Cuprex therapy is simple. One treatment—of from 15 to 30 minutes—destroys the nits as well as the lice. Cuprex requires no messy or repeated applications, and the patient may return to his job without delay, and without embarrassment.

Literature on request

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OBTUNDIA CALAMINE LOTION contains Obtundia*, calamine, zinc oxide, glycerin, magma of bentonite, and lime water. It combines to a considerable extent the surface desensitizing effect of Obtundia with the well-known soothing and protective qualities of calamine. In addition to use in ivy and other plant or insect poisoning, Obtundia Calamine Lotion is finding favor in the treatment of certain forms of industrial dermatitis where mild lotions or creams are desirable.

OBTUNDIA CALAMINE CREAM is a soft, flesh-tinted, hydrophylic cream containing Obtundia Calamine Lotion in a non-fluid state. It is excellent for certain pruritic conditions of the skin in industrial dermatitis. It is often preferred by travelers and campers as it is supplied in an attractive, collapsible tube not subject to spillage.

**Detailed information about Obtundia, a modern, topical, anesthetic and antiseptic liquid surgical dressing, will be sent promptly upon request.*

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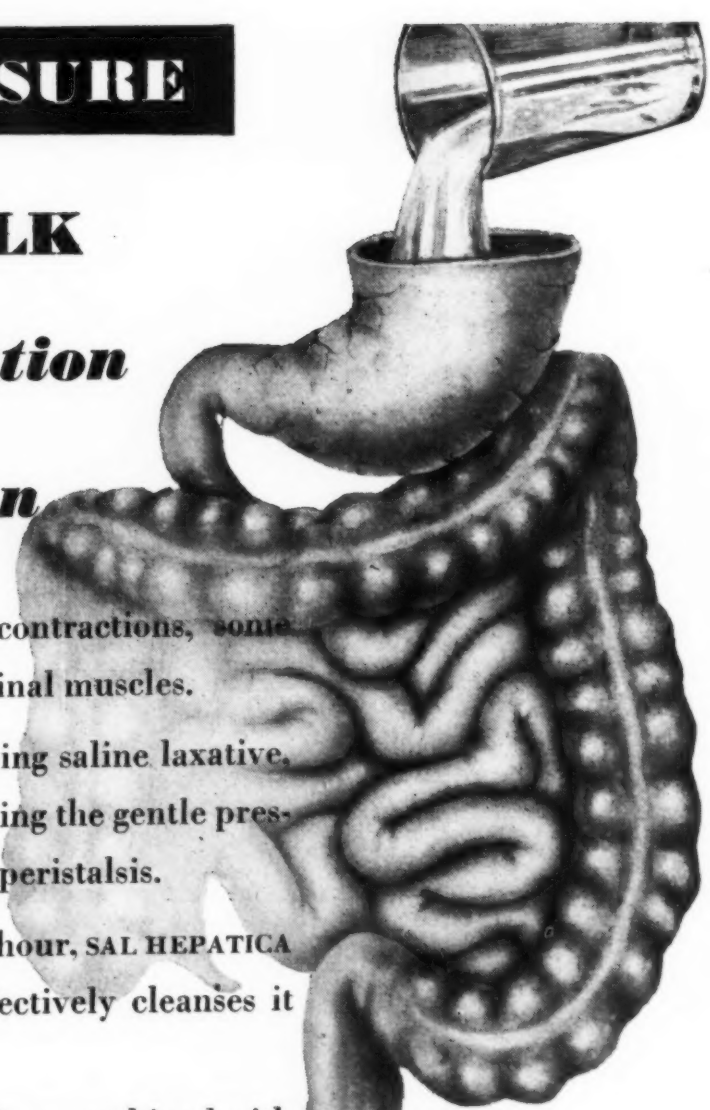
of LIQUID BULK

relieves constipation

without irritation



In order to reinforce peristaltic contractions, some laxatives act by irritating the intestinal muscles.

In contrast, SAL HEPATICA, a sparkling saline laxative, follows nature's own methods by using the gentle pressure of "liquid bulk" to stimulate peristalsis.

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GENTLE PRESSURE FOR GENTLE YET THOROUGH LAXATION

practice. For instance, if I have an important operation scheduled, the nurse postpones my factory appointments. My industrial work takes up the time I used to give gratis in clinics, and serves the purpose of keeping me abreast of conditions outside my specialty. I feel, on the whole, that clinical work is a job for younger men and that I have done my share. While I deal mostly with organically sound people, I continue to read about and do research on pathological conditions also. To the young physician my advice is: 'By all means get a part-time industrial job if you can and when you know enough. But don't attempt it until you have an established private practice. If you concentrate on industrial medicine immediately, you will limit the scope of your professional experience to a degree that may in turn limit your fitness for private practice later.' Industrial work can, of course, be considered a feeder for private practice; but to use it as such is unethical. I have consistently refused to accept my industrial patients as private, paying patients—even to the extent of refusing to tell them where my private office is located. This policy has had a definite bearing on my relations with other physicians. Wherever necessary I refer the worker back to his own doctor. And since often it would not have occurred to him to go, the family physician appreciates my action. I feel very definitely that my standing in my medical society has been improved by my industrial work."

WHEN I first began practice in Indiana I didn't find much to occupy my time, so I began to look about for ways of keeping busy. I soon discovered that the largest industrial concern in town was only about 10 minutes away from my office. Inquiry elicited the fact that the company, which manufactures electrical products, had some 650 employees and that whenever one was injured or disabled he was referred to a doctor five miles away. When I dropped in to see this physician I found that he did not relish the work at all and would be grateful if he were relieved of it. Having settled the ethical aspect of the matter, I went to the management and suggested an emergency medical office in the plant, with a doctor on call at all times. I think my arguments in its favor were sound. At any event they convinced the company that medical service on the premises would aid employee morale, decrease absenteeism, and lower workmen's compensation insurance rates. Now, after 10 years, the company and I are mutually satisfied with the arrangement. I have my own office for private practice within a few minutes' walk of the plant. Since I spend only an hour a day on industrial work, for which I am paid a salary, there is little interference with my private practice. Of course, there are some things about industrial practice that can be disturbing. Malingering is one. To distinguish between the truly ill and those who want official sanction for loafing calls not only for medical skill but for considerable tact and judgment. Today you may not provoke industrial unrest. You must be a diplomat with the employee but also remember your duty to the employer. My industrial work does not feed my private practice because our company provides full medical treatment for all employees. It is, however, an indirect source of patients since many workers recommend me to their friends. At 42, I specialize in x-ray and traumatic surgery. I find my two practices not incompatible. My industrial salary pays most of my ordinary private office expenses, such as rent, light, telephone, and a nurse. Perhaps if I had to lose valuable time hopping from private office to plant, the program would not be so economically sound."

I WAS off to an earlier start in industrial medicine than most men. While yet a pre-med student here in the West, I assisted a surgeon who was on a retainer basis with five large corporations. I was doing dressings and swabbings when ordinarily we don't know the difference between a tonsil and hemorrhoid. On completion of my interneship I was offered a job at $4,000 a year by an insurance company specializing in workmen's compensation. That seemed like good money for a youngster, but I did not let my horizon become dimmed by the subsidy. I immediately attempted

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UNUSUAL "DRYNESS" of the nose — whether in the initial stage of a cold, or as a result of unfavorable climatic conditions, or secondarily following the instillation of aqueous solutions — may be considerably relieved by the intranasal administration of an oil spray[2] or drops like Pineoleum. So, too, may the irritation induced by many strong saline or ephedrine solutions—with their tendency toward "pickling" the delicate epithelial lining and depriving it of its normal protective covering.[1] • Indeed, Pineoleum is highly favored for symptomatic relief of the nasal manifestations of coryza because of the soothing and protective action inherent in its liquid petrolatum base and contained ingredients. It has also been observed that Pineoleum with Ephedrine (with its moderate ephedrine content) helps reduce inflammation and improve ventilation and drainage without fear of undesirable turgescence, atony and bogginess.
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References: 1. Goldsmith, P.G.: Canad. M. A. J., 48:426, 1943.
2. Spearman, M. P.: Texas St. J. Med., 39:350, 1943.

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Subjective Relief
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Rapid Resolution

THE basic pathogenicity of contact dermatitis consists of primary skin irritation, never a preexisting allergy. In consequence, any known irritant may affect anyone, depending upon individual susceptibility and duration of contact. In acute dermatitis vesiculation is seen, but in the more common subacute and chronic varieties, lichenification, fissuring, and scaling are the rule. Pruritus is usually severe, and is a prominent symptom. Tarbonis, providing the decongestant and stimulant properties of tar, quickly controls the annoying itching and encourages rapid resolution of the dermatitis itself. Avoidance of soap and water and cleansing with oil are beneficial auxiliary measures. Tarbonis will be found of outstanding efficacy in all types of contact dermatitis and industrial dermatoses.

Tarbonis is colorless, odorless, greaseless, does not stain linen or skin. It contains 5% Liquor Carbonis Detergens extracted from selected tar by a unique process, retaining all beneficial factors of tar and eliminating the irritants. Menthol and lanolin are also incorporated in the vanishing cream base, making for a preparation of unusual pharmaceutical elegance. Specifically indicated whenever the action of tar is required.

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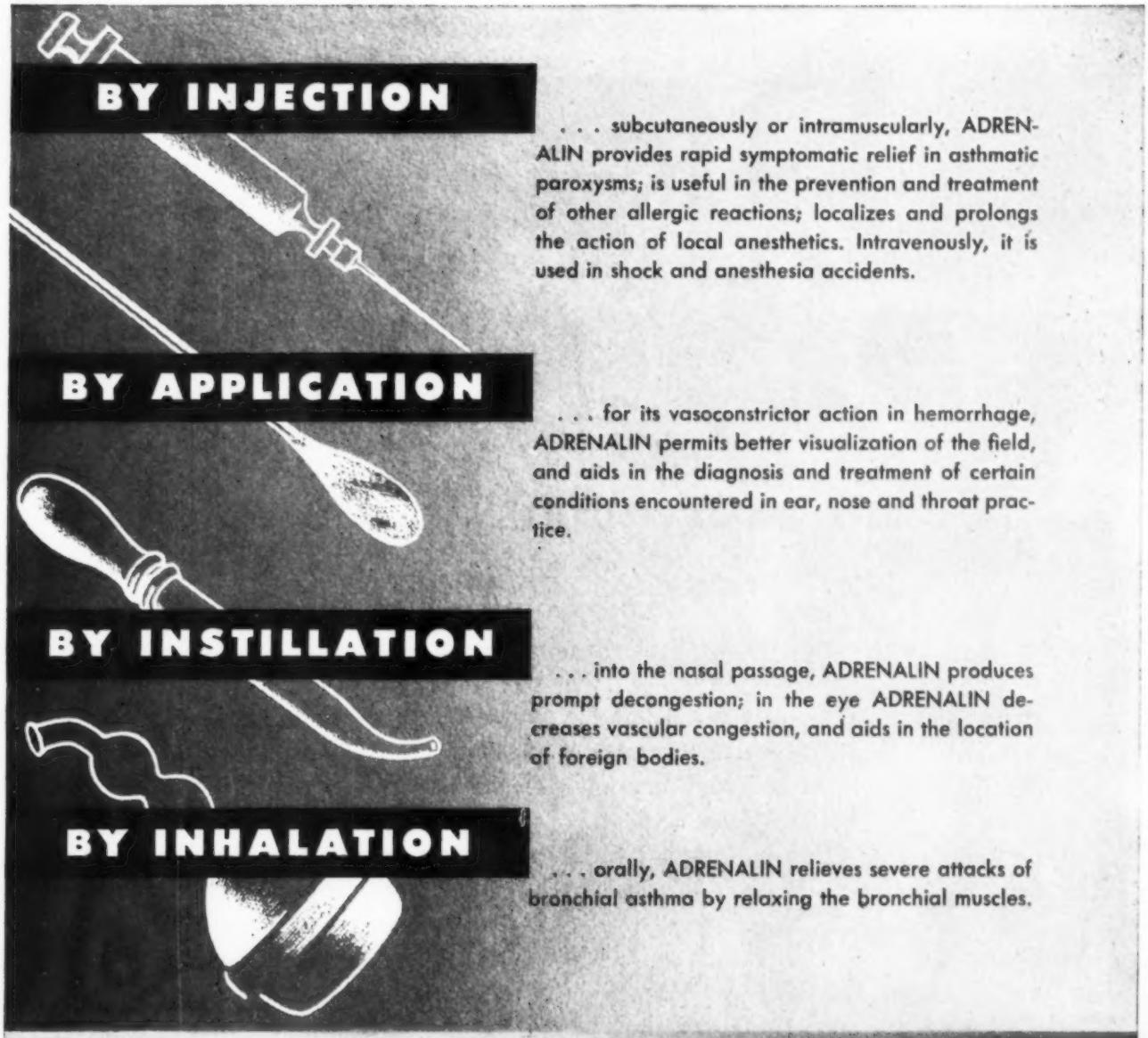
to augment my income by opening an office for private practice in the evening. Within a short time the company raised me to $5,000. I tried to balance both industrial and private practices, but with a lot of difficulty. Because I wasn't available to people seeking my services in the daytime, the evening trickle into my office remained pretty meager. After a while I proposed to the company that I handle their patients in my own office, where I could also keep an eye on my private practice. The company declined, but shortly afterward several corporations that had become acquainted with my insurance work asked me to abandon it and take over their joint industrial medicine program. I accepted on *my* conditions: that I would work in my own office and that my time would be my own, subject only to demands during the ordinary working day. In other words, I would be available to employees from 8:00 A.M. to 6:00 P.M. This system worked well. Several other companies, obtaining favorable reports on my work, prevailed upon me to enlarge my activities. Today I am serving some 7,500 workers in an industrial city whose principal products are rubber goods, electrical appliances, and wire. I am actually on 24-hour call now. And there is some Saturday and Sunday work once in a while because the factories keep maintenance crews on duty over week-ends. My industrial practice takes up about two-thirds of my time, but inasmuch as I treat most of the workers in my office, I am also available for private consultation. I receive a fee for each call. I find this the only method that operates equitably for the physician. I much prefer it to a salary. My industrial work during the war pulled down my income to some extent. Before hostilities, I had an able young assistant who was so thoroughgoing in his work that I could devote the greater part of my time to private practice. I like surgery and was getting more than a fair share of majors. When my assistant went into service I had to cover his assignments as well as my own, and surgical work fell off. Actually I'm so tired when I finish my industrial practice that I cannot tackle the majors. I have a high opinion of part-time industrial medicine. For one thing, the physician is assured a decent income over the year (it is likely to be less than in some other specialties, but it has the virtue of being steady). Industrial medicine also furnishes wonderful training; as Dr. John J. Moorhead has pointed out, it makes one 'a specialist in all specialties.' I don't obtain many private patients from my part-time industrial work. Those I do get are seldom desirable. Employees often feel you should treat their non-industrial ills, as well as those of their families, without charge. Usually I refer the employee to his own physician, which makes for good feeling all around. The hospitals here have a high regard for my industrial references. The company pays the bills and there is never any controversy over them. While I consider it advantageous to have one location for both industrial and private practices, I think they should be divided within the suite. I have arranged things so that my private patients are admitted through the front entrance and industrial patients through the rear. That averts any embarrassment for the man in working clothes. I have different consultation and treatment rooms, too, with everything in the industrial section immaculately neat but of utilitarian design. By using booths, I can take care of several patients in a minimum of office time. I am 42. If I had my medical career to reshape I would not change a single step I have taken. Industrial practice has added to my professional skill and has relieved me of financial worries. Soon I can turn this practice over to some younger man while I devote my time exclusively to surgery."

I AM a full-time industrial physician for a New England manufacturing company which normally employs about 1,000 workers in my plant (one of several). I got into my present job because I was a friend of the physician who held it before me. When he went into the Army, he asked me if I'd take over. I did, expecting to handle it as a part-time job while I maintained my private practice of pediatrics. As the plant began to expand, though, I realized that partial attention to my industrial work wouldn't do, and I decided to give it full time. Naturally, this meant some sacrifice in income, but I considered it my contribution to the war effort. I do not think a man can be successful as an industrial physician without a background of private practice. In industrial medicine the patient-doctor



BY INJECTION

. . . subcutaneously or intramuscularly, ADRENALIN provides rapid symptomatic relief in asthmatic paroxysms; is useful in the prevention and treatment of other allergic reactions; localizes and prolongs the action of local anesthetics. Intravenously, it is used in shock and anesthesia accidents.

BY APPLICATION

. . . for its vasoconstrictor action in hemorrhage, ADRENALIN permits better visualization of the field, and aids in the diagnosis and treatment of certain conditions encountered in ear, nose and throat practice.

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. . . into the nasal passage, ADRENALIN produces prompt decongestion; in the eye ADRENALIN decreases vascular congestion, and aids in the location of foreign bodies.

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. . . orally, ADRENALIN relieves severe attacks of bronchial asthma by relaxing the bronchial muscles.

Its remarkable ability to stimulate the heart and increase cardiac output, raise the blood pressure, constrict the peripheral arterioles, dilate blood vessels of voluntary muscles, and relax bronchial muscles . . . makes ADRENALIN one of the most *versatile* and *useful* therapeutic agents at the command of the physician. Little wonder, then, that it's always kept close at hand in operating room, office, and medical bag.

To permit full use of its many therapeutic applications, there is a form of ADRENALIN (Epinephrine) to meet every medical need: Solutions of 1:100, 1:1000, 1:2600, 1:10,000; Suspension of 1:500 in oil; and Inhalant, Suppository, and Ointment.

ORIGINAL ADRENALIN

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Not Merely Vitamins

In recent years, the emphasis and publicity given to the nutritional importance of vitamins has tended to detract from the established significance of other, equally essential nutrients. Yet proteins, sources of caloric energy, and minerals play just as important a role in maintaining the body economy and in insuring a minimum of fatigue.

Although an excellent source of B complex and other vitamins, Ovaltine is more than a purveyor of these nutritional factors. Prepared with milk, this delicious food drink provides, in addition, biologically adequate protein, readily utilized carbohydrate, highly emulsified fat, and essential minerals, as indicated by the table shown below. It is therefore a balanced nutritional supplement which finds many uses by the industrial surgeon.

Ovaltine adds to the nutritional value of any meal; it aids the worker in obtaining adequate amounts of the nutrients needed for maximum physical productivity and lessened fatigue.

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Three daily servings of Ovaltine, each made of ½ oz. Ovaltine and 8 oz. of whole milk,* provide:

PROTEIN	31.2 Gm.	VITAMIN A	2953 I.U.
CARBOHYDRATE	62.43 Gm.	VITAMIN D	480 I.U.
FAT	29.34 Gm.	THIAMINE	1.296 mg.
CALCIUM	1.104 Gm.	RIBOFLAVIN	1.278 mg.
PHOSPHORUS	.903 Gm.	NIACIN	7.0 mg.
IRON	11.94 mg.	COPPER	.5 mg.

*Based on average reported values for milk.

relationship is of vital importance, and it would be a rare doctor who could hold up his end without some previous experience. The full-time industrial doctor should be on a salary level with the more important officials of the company—say the vice presidents—and make a minimum of $6,000 a year. In some sections industrial medicine is not held in too high repute among physicians because of low salaries that fail to attract the best men. I feel that medical educators will soon establish industrial medicine as a specialty and make internships and post-graduate courses in this field more widely available. Of course, even if a man receives good training in industrial medicine, he still needs a background of private practice. If he is going to make industrial medicine his career, let him start out in part-time work."

IT TOOK me almost 10 years to get into part-time industrial practice. Finally in 1942 I found the position I wanted. I had felt from the day I hung out my shingle in 1933 that I would have to supplement my private practice with other work, since I had set up shop in a neighborhood where the income level was relatively low. I never had morning hours. From 1933 until 1941 I spent my mornings doing free work at a medical-pediatric dispensary. During those years I was still building my practice, but I disliked o.b. work, and my determination to get rid of it intensified my search for a part-time industrial connection. Such positions in my experience are extremely hard to find. In normal times, anyway, they are not advertised; news of industrial openings is spread for the most part by word of mouth. I have found, too, that proffered positions are often unsuitable. In looking for a job requiring only two or three hours a day, you may learn that the demand is for a minimum of six. Many a time I heard that a position was open, only to be told when I applied that it had already been filled. Eventually, though, I managed to make application for a desirable post before someone else snagged it. The interview was thorough: I was asked for full details regarding my medical school training, internship, private practice, and special qualifications. I now work at the plant from 9:00 A.M. to 12 noon, five days a week. This, added to my private practice, means I am on the job nearly 14 hours a day. Technically, I'm on industrial call 24 hours a day; but, generally speaking, on-call work does not amount to more than three or four hours a month. My salary of $250 a month accounts for about a third of my total monthly gross income. My industrial work is generally confined to pre-employment examinations, care of minor injuries, and supervision of first-aid treatment. Major surgery is referred to a man who works on a fee basis; the seriously injured are sent to hospitals. Industrial work may be an excellent source of private patients but I discourage it for two reasons: (1) The company pays sick benefits, which I must certify. I don't want to be in the embarrassing position of having to say no to one of my own patients, nor do I want to give the company the slightest reason to think I might be favoring my patients by authorizing benefits. (2) I believe that it is to the patient's own advantage to have a family physician. As much as I like industrial work, I would not undertake it on a full-time basis, principally because I do not want to lose the private contacts I have made. I think I have found a happy medium, both professionally and financially."

Epilepsy and Job Placement

—From the forthcoming book, "Job Placement of the Physically Handicapped," by CLARK D. BRIDGES, Director of Conservation Services, Zurich Insurance Companies, to be published by the McGraw-Hill Book Company early in 1946—

THE term epilepsy is derived from the Greek and means seizure. Epilepsy is a condition marked by periods of abrupt loss of consciousness which are frequently accompanied by convulsive movements. It involves the brain and nervous system and causes increased activity of nerves which govern the actions of the muscles, resulting in spasms of muscular jerking or twitching. Being unconscious, the person does not feel pain. Dependent upon type, the entire seizure (spell, fit, attack) may last only a few seconds or for hours. Most epileptic convulsions are over in

A Fundamental Approach
TO SULFUR METABOLISM

HYDROSULPHOSOL

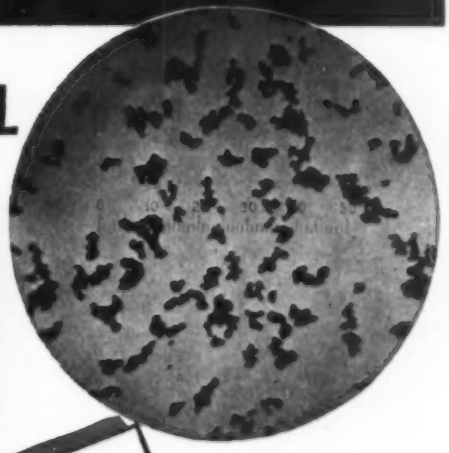

Illustration showing flowers of sulfur magnified 82X: small divisions = 10 microns. The size of the colloidal sulfur particle in Hydrosulphosol is estimated at 1/1000 of a micron or 1/10,000 of the small division particle illustrated

A true solution of sulfur bearing compounds resulting solely from the reduction of flowers of sulfur by a catalytic process. In aqueous solution, it is capable of releasing its unusually high concentration of sulfhydryl ion in readily utilizable form . . . without evidence of toxic reaction.

Its therapeutic importance may best be evaluated by the fact that the —SH radical of the cysteine forms the active group in glutathione, alone of reported importance in connection with tissue oxidations.

Hydrosulphosol is indicated in the management of burns, ulcers and pathological conditions in which sulfur metabolism is a clinical consideration.

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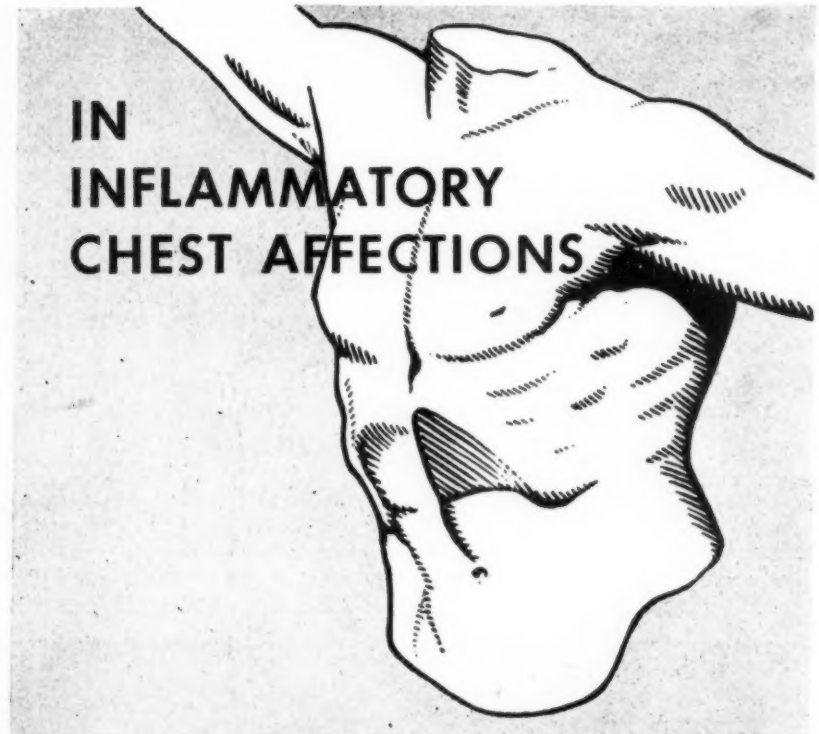

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two to five minutes, but the individual may then fall asleep for an hour or more.

Epilepsy is classed as idiopathic (self-originated) when no cause can be assigned after careful examination. Epilepsy is classed as symptomatic when seizures are due to some abnormal condition of the brain, such as an injury, defective development, or inflammation of the brain. Included in the causes of symptomatic epilepsy are severe head injury (traumatic epilepsy); infections that attack the brain, such as encephalitis, meningitis, or syphilis; arteriosclerosis, brain hemorrhage, tumors of the brain or various toxic (poisoned) conditions of the blood; (kidney disease, alcohol, lead poisoning, low blood sugar, etc.). The idiopathic cases far outnumber the symptomatic ones.

Epilepsy may develop at any age without demonstrable cause, although attacks commonly begin in early childhood and adolescence. Injuries to the brain, resulting in epilepsy, assume increasing importance during wartimes, and an appreciable number of injured war veterans may be expected to develop epilepsy.

Epileptic seizures are of several different types:

Grand mal (major epilepsy)—In this type the loss of consciousness is accompanied by convulsive movements during which the person falls, becomes rigid, and has spasmodic jerking of the limbs. This lasts from one to several minutes and is usually succeeded by a deep sleep. In about one-half of the cases the loss of consciousness is preceded by warning symptoms (aura) that may permit the patient to lie down or seek seclusion. Physical injury is most frequent in this type of seizure.

Petit mal (minor epilepsy)—The person merely loses consciousness for a few seconds or less but does not fall or have convulsive movements. Such attacks are a handicap only in situations in which continuous attention is imperative, such as operation of motor vehicles.

Epileptic equivalents (psychomotor seizures)—In this type there is loss of full consciousness (a condition of amnesia) for a few seconds or many hours, but the person is able to maintain his balance and may act as though conscious.

Other variations in the individual effects of the seizures and time of occurrence are many and emphasize the necessity of evaluation of each case on an individual basis.

Seizures may occur with great infrequency, sometimes years apart, or with disturbing, disabling frequency.

Seizures may occur only at night and often during sleep—called nocturnal epilepsy, or only during the daytime or upon awakening in the morning.

Seizures may occur only during menstruation, or as a result of intense emotional stimulus, or as a result of gastric disturbance.

Seizures in some are accompanied by screaming.

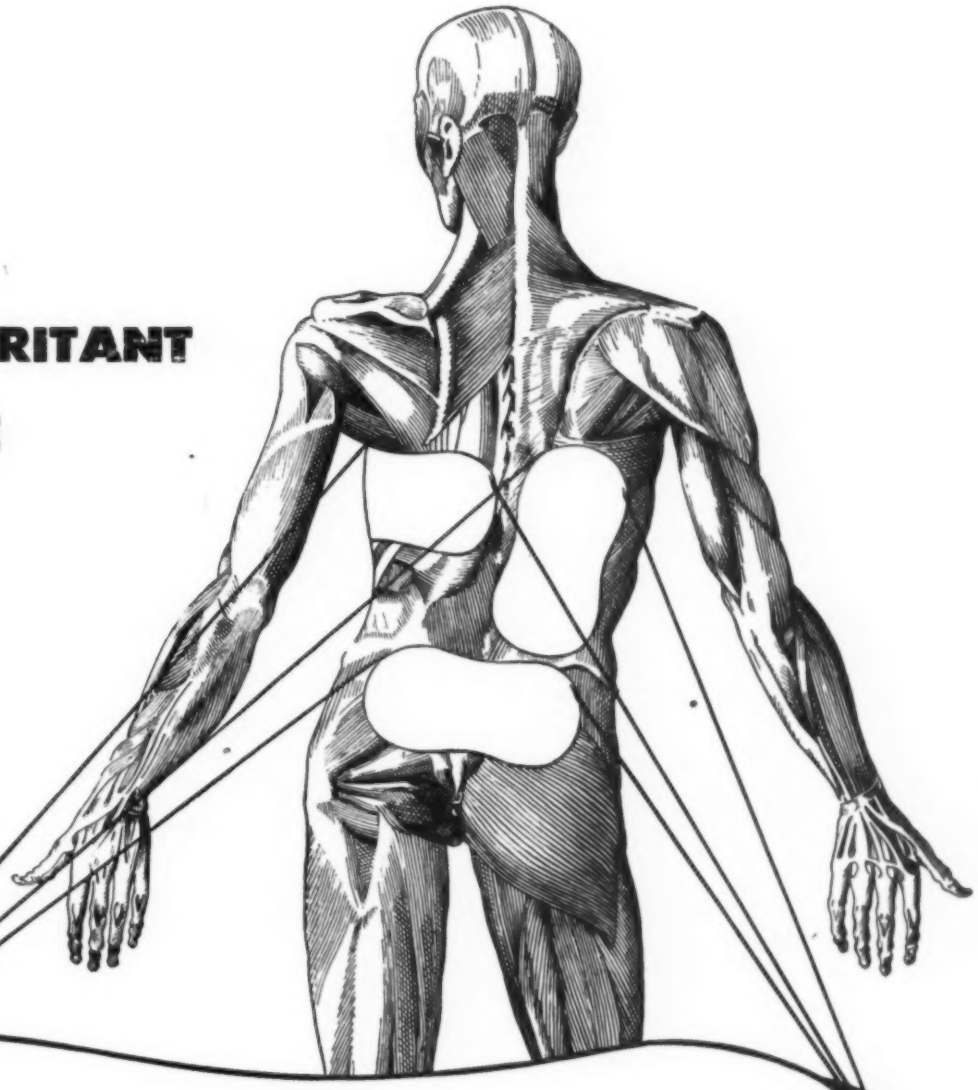
The Jacksonian type is one in which a group of muscles twitch while consciousness is retained. In most persons this partial seizure may be followed by a generalized convulsion with loss of consciousness.

The general effects upon the intellect and personality are less than is commonly supposed. A small percentage of epileptics are congenitally defective and require institutional care. Outside of those in institutions, some 20% are unemployable because of the severity of their seizures, or because they are seriously affected mentally or have difficult personalities, being stubborn, irritable, suspicious, and opinionated. The remainder, approximately 75%, are perfectly normal persons between seizures, having desirable mental and physical qualifications for job performance. Life expectancy is generally not affected for most adult epileptics.

Recognition or diagnosis of epileptic tendencies is assisted by the brain wave test. This test, called the electroencephalogram (E.E.G.), shows disturbances in the normal electrical currents of the brain in epileptic persons. However, a competent neurologist usually can make the diagnosis without this test.

Treatment of epilepsy has taken great strides recently. A new medicine—phenytoin sodium (trade name, dilantin sodium)—has come into use, along with other very useful drugs. Under supervision of a competent doctor, the majority of epileptic persons can be kept free, or relatively free, of attacks, and after several years of freedom the medication can usually be discontinued. In some cases attacks will return if medication is stopped, just as the diabetic who forgets his insulin will have trouble. However, the majority of cases can be so successfully managed that their seizures will be brought under control or near

A SAFE COUNTER-IRRITANT FOR SIMPLE BACKACHE



• In cases of simple muscle pain, soreness, stiffness or fatigue, Johnson's BACK PLASTERS are a convenient agent for continuous counter-irritation, support and protection against chilling. Their primary effect is simple, direct and desirable. The plaster's mild counter-irritant, held on warm flannel, causes local and reflex hyperemia—relieving congestion, easing muscle pain and assisting natural body processes.

• Results are immediate and prolonged—one plaster may remain in place for several days, exerting its *continuous* heating, protective and pain-relieving effect. More and more physicians use this tested aid where patients require additional splinting and warming action in post-treatment exposure.

• *Write for liberal free supply of Johnson's* BACK PLASTERS *and* BELLADONNA PLASTERS. *Both are worthy of increased clinical attention.*

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Johnson's **BACK PLASTER**

NEW LAMINATED PELLET

FOR

PROPHYLAXIS AND THERAPY OF MULTIPLE VITAMIN DEFICIENCY

EACH PELLET CONTAINS

8 VITAMINS

Vitamin A From fish liver oil	5000 U.S.P. units
Vitamin B_1 Thiamine Hydrochloride	2 mg.
Vitamin B_2 Riboflavin	2 mg.
Vitamin B_6 Pyridoxine Hydrochloride	0.5 mg.
Calcium Pantothenate	1 mg.
Niacinamide	20 mg.
Vitamin C Ascorbic Acid	50 mg.
Vitamin D Chemically pure synthetic vitamin D_2 (calciferol) from ergosterol	1000 U.S.P. units

PLURAVIT... Trademark Reg. U. S. Pat. Off. Brand of MULTIPLE VITAMINS

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WINTHROP CHEMICAL COMPANY, INC.
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NEW YORK 13, N. Y. WINDSOR, ONT.

control. It is highly desirable that epileptics be placed under the medical care of physicians who are interested and familiar with the best methods of diagnosis and treatment of epilepsy.

The principal voluntary organization in the field of popular education is the American Epilepsy League, Inc., formerly the Laymen's League Against Epilepsy, Inc., Boston. In addition to various pamphlets on this subject available for the asking, the League advises the reading of two excellent popular books, "Science and Seizures, New Light on Epilepsy and Migraine" (Harper and Brothers), and "Convulsive Seizures" (Lippincott).

The experience gained by this League and by some employers in the effective placement of epileptics might well serve as a guide to help in the correction of misguided policies and superstitious fears. Safety records of properly placed epileptics are good from all reports, although the amount of statistical information on the subject available at this time is limited.

Placement Considerations

PLACEMENT of epileptics is based upon the avoidance of certain activities and exposures in general, and an individual evaluation of each case. Epileptics, as a rule, will not divulge their disability to prospective employers because of the danger of outright rejection, unless they are assured of, and confident of, suitable placement where they cannot injure themselves or others. Factors important in the evaluation of the individual are:

Type of seizure....Which type is it? How severe? Some persons are subject to more than one type.

Frequency of seizure.... Do attacks occur days, weeks, months, or years apart? Are they regular or irregular?

Duration of attack....How long does it last and how long before work can be resumed?

Warning of seizure....Is seizure preceded by aura, and is it consistently reliable? These warnings are present in about one-half the cases and may enable the person to leave his work and lie down. There is always the possibility of seizure without aura.

Does screaming accompany seizure ....Some few cases scream so violently that it may be definitely disconcerting to other workers.

Time of seizure....Some epileptics are never known as such by their employers, because attacks occur only at night. When reliable as to time of attack, they should be placed to take advantage of the free period.

Mental deterioration or personality changes....These may be determined by conversation with the patient or his friends or by appropriate examinations.

Medical supervision....Is he under competent doctor's supervision? What medication, if any, is used? What is the dose and what the apparent effect?

In summary, it is generally agreed that those with very frequent grand mal convulsions at unpredictable hours are unemployable except in special workshops. The type of attack alone is not a fair guide, as some grand mal cases have attacks at intervals that may be many months or years apart. Attacks are believed to be less frequent when the individual is employed and using his muscles and brain than when idle or sleeping. It has been found desirable by some employers to place epileptics in pairs, so that one may attend the other in the event of attack.

Job factors which must be considered are avoidance of jobs requiring excessive nervous stress or emotional strain. Routine jobs are desirable in many cases. As with other persons, the experience, skill, and aptitude of the individual must be considered. Epileptics should not be placed in jobs in which the safety of others or themselves may be endangered by loss of consciousness or by uncontrollable actions.

Working conditions that are generally to be avoided are mechanical and electric shock hazards, exposure to vehicles or moving objects, any activity involving danger of falling from one elevation to another—ladders, scaffolds, etc., exposure to burns or handling of flames as welding torches or molten metal, and work in cramped quarters. Head injury hazards due to falling objects from overhead should be avoided, although this exposure may be considerably reduced by safety hats. Undue exposure to systemic poisons, anaesthetics, and asphyxiants is very undesirable, as the majority of toxic substances are capable of producing disturbances of or damage to the nervous system.

Meakins*, discussing the treatment of acute rhinitis, suggests the use of aspirin several times daily as a means of affording symptomatic relief.

An improved method of prescribing acetylsalicylate and assuring a concomitant intake of fluid is provided in—

Acetyl-Vess

—producing an effervescent salt of aspirin (8.5 grs.) buffered with sodium citrate (27 grs.).

CLINICAL ADVANTAGES: The buffer-alkali mechanism, together with the CO_2 factor of the effervescent base, combines to

Speed stomach emptying time—reducing tendency to gastric upset

Make preparation readily available for absorption—enhancing (augmenting) analgesic effect

Available through your prescription pharmacy in bottles of 25 tablets.

*Meakins, J. C.: The Practice of Medicine, St. Louis, The C. V. Mosby Company, 1940, p. 23.

AMES COMPANY, Inc. • Elkhart, Indiana

Mention of a few of the more common ones may serve as a guide: lead, manganese, mercury, arsenic, phosphorus, carbon monoxide, carbon disulphide, trichlorethylene, carbon tetrachloride, ethylene dichloride, nitrobenzol, hydrogen sulphide, etc.

Particularly to be avoided are those poisons and exposures that may manifest some of their ill effects by convulsions—poisons such as oxalic acid, phenol, methanol, cyanogen compounds, benzol, phosphine (phosphuretted hydrogen), picric acid, dinitrophenol; exposures to decreased atmospheric pressure due to aeroembolism.

Examples of jobs that are generally unsafe are the operation of overhead or travelling cranes and vehicles, welding or torch work in which the torch may be dropped or thrown, handling molten metal, etc.

COMMENT and OPINION

DESPITE scarcities of hospital facilities and equipment and unprecedented requirements of the armed services, the nation's health during the war years was maintained at higher standards than in peacetime.

—War Production Board, reviewing the work of its Hospital Section, organized in 1942.

The Nurse's Profession

BETWEEN the industrial physician and industrial nurse lies a profound understanding of the nurse's capability and limitations. The industrial nurse has proved to the physician that the patient's welfare comes first, and that she is not in industry to practice medicine, but is there to safeguard the welfare of the patient, in so far as she is capable of doing so purely by nursing technic. From this profound understanding has arisen a marked degree of confidence by the physician in the industrial nurse, and an awareness on his part of her true value in the profession. The nurse in industry therefore should assume no responsibility for service outside the field of her professional training.

—From *American Mutual Magazine*, 23:2, 24, November, 1945.

Samuel Gompers' Advice

THE introduction of compulsory social insurance in cases of sickness, or compulsory social insurance in cases of unemployment, means that the workers must be subject to examinations, investigations, regulations and limitations. Their activities must be regulated in accordance with the standards set by governmental agencies. To that we shall not stand idly by and give our assent. . . . There is in the minds of many an absence of understanding of the fundamental essentials of freedom. They talk freedom and yet would have bound upon their wrists the gyves that would tie them to everlasting bondage. And no matter how sympathetic or humanitarian is the gloss over the plan and the scheme, I again bid you beware. We know not when or how this great struggle going on in Europe will terminate, or what it shall mean for the future of those countries, but at least let the people of the United States hold their liberties in their own hands, for it may come to pass that our America, the America whose institutions and ideals we so much revere, may be the one nation to hold the beacon light of freedom aloft and thus aid in relighting the torch, rekindling the heart flame of the world's liberty. For a mess of pottage, under the pretense of compulsory social insurance, let us not voluntarily surrender the fundamental principles of liberty and freedom, the home of the Republic of the United States, the leader and teacher to the world of the significance of this great anthem chorus of humanity—liberty!

—From a speech by SAMUEL GOMPERS on "Compulsory Health Insurance," December 5, 1916, quoted in *Weekly Bulletin of the St. Louis Medical Society*, 40:5, 54-55, October 19, 1945.

Mandatory Physicals

RECENTLY the newspapers of Westchester carried an editorial setting forth the proposal of Mr. Joel Mencher of Tuckahoe, President of the Young Republicans Clubs of the State, for mandatory physical examinations. Mr. Mencher recommended a Federal law "which would require periodic physical examinations of all citizens, possibly every two years. Those who desire might utilize their own family physicians, where certificates would preclude

Compare THESE 2
ELASTIC BANDAGES

ACE NO. 1

ALL-COTTON . . . WITHOUT RUBBER

Should be compared *only* with all-cotton elastic bandages.

This original Ace is the standard all-cotton elastic bandage and has proven its therapeutic value in many thousands of cases of varicose veins and ulcers, strains, sprains, and injuries.

Made from long-fibered Egyptian cotton with properly twisted warp and weave, it has an adequate quantity of cross threads to provide substantial body. These specifications assure moderate, uniform stretch over the full width of the bandage. Cool and comfortable to wear due to its porous weave. Washing restores elasticity.

ACE NO. 8

SKIN-TONE . . . WITH LASTEX*

Should be compared *only* with rubber reinforced elastic bandages.

Preferred where motion of the part wrapped may cause slipping or loosening of the bandage.

Ace No. 8 assures constant elasticity because it is reinforced with "Lastex"* yarn. It has been designed to remain elastic and useful — comparatively unaffected by dealer storage, perspiration, oils, grease and solvents that may shorten the life and reduce the therapeutic value of rubber reinforced bandages. A woven "brake" controls the stretch, adding to the stability and life of the bandage.

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Made for the Profession

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IMPROVED FORMULA

VITAMIN CAPSULES

WITH CAROTENE

A FORMULA BASED ON

The Modern "Yardstick" of Nutrition

RECOMMENDED DIETARY ALLOWANCES

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These standards are considerably higher than those believed to represent the minimum daily requirement.

One Capsule Daily

ASSURES AN EXTRA MARGIN OF SAFETY

THE BOX LUNCH often falls short of providing the necessary nutritional requirements of the industrial worker. To assure a full measure of vitamin support, Vitules are recommended as an independent source of optimum quantities of essential vitamins. Supplied: Bottles of 30 and 100.

Vitules—*The Only Multivitamin Capsule Containing Carotene (Provitamin A).*

HIGH POTENCY FORMULA		
VITAMINS	RECOMMENDED	VITULES
Vitamin A	5000 U. S. P. Units	5000 U. S. P. Units*
Vitamin D	400 U. S. P. Units	1000 U. S. P. Units
Ascorbic Acid	75 mg.	75 mg.
Thiamine	1.8 mg.	2.0 mg.
Riboflavin	2.7 mg.	3.0 mg.
Niacin	18 mg.	20 mg.
Pyridoxine (vitamin B_6)	—	2 mg.
Calcium Pantothenate	—	20 mg.

*1000 units from carotene; 4000 units from fish liver oils.

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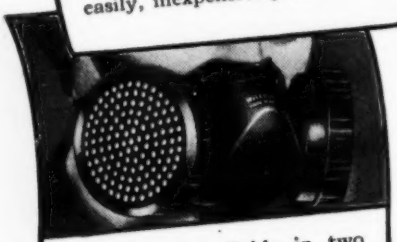
This One Respirator does the job of Four

Yes, workers get 4-way safety with this Willson respirator. Protects lungs against 4 different industrial hazards. Metal fumes. Pneumoconiosis-producing dusts. Toxic dusts. Nuisance dusts.

Two double filters provide extra-large filtering area. Give workers the greater comfort of free-and-easy breathing. Filters are throw-away type. May be easily, inexpensively replaced.



Face piece available in two sizes to fit either small or large face. Both sizes carry Bureau of Mines approval. Compact, the respirator may readily be worn under a welding helmet.

For help on your lung-protection problems, get in touch with your Willson Distributor or write direct to Dept. IM-12.

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have a *Plus* value

Manufactured of finest 18% non-corrosive nickel silver, these precision-made clips are unexcelled for uniformity of angulation, needle-sharp points, desired bending strength and durability.

They feature a patented "Anchor"

Affixed to one end of the gang wire, this practical innovation offers the following advantages—

1. The "Anchor" may readily be slid off the wire or repositioned by finger pressure . . . the required number of clips freely removed . . . remaining clips retain their factory-new characteristics for future use.
2. The gang wire need never be bent to disengage or secure remaining clips, thus no series of humps are developed in the wire which might hinder removal of further needs.
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Available in 11, 14, 16, 18 and 22 mm. sizes

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SPEED Recovery

REDUCE ABSENTEEISM from DISABILITY!

Industrial hospitals, dispensaries and first aid rooms find the ILLE Portable Unit for Hydromassage unsurpassed in the treatment of synovitis, bursitis and other traumas . . . invaluable also for functional improvement in the after-care of fractures, burns, infections, contusions, adhesions and stiff joints. The ILLE Portable Unit is easily moved, and can be quickly regulated to provide any degree of hydromassage. Over 3000 now in use in military hospitals!

Write for complete details

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arbitrary examinations at governmental clinics of others who failed to take the examination voluntarily." . . . The editorial states that "health is a matter for governmental police power." Can this statement stand up in court? It would not appear that an individual's *health* is other than his own private affair. His *sickness* on the other hand, may or may not be a matter for public concern. If his *sickness* is a probable threat to the public weal, it may properly become subject to the exercise of governmental police power as defined by statute; but his sickness must first be proved, and the reasonableness of his isolation, let us say, be generally accepted. Too often, we think, the terms health and sickness are used interchangeably and regrettably, as for instance 'health insurance,' when insurance against sickness is really meant. Physical examinations may sometimes reveal actual or impending states of sickness; but, on the other hand, they may not. There are a number of reasons for this. The physical examination may be anything from a mere inspection to a complete and exhaustive investigation including a variety of laboratory and other procedures. Many of these depend upon the willingness and cooperation of the individual concerned. Can you compel this by statute? Or will education and persuasion accomplish more? Again, the science and art of medicine while progressive are not perfect, neither are they infallible.

—From an Editorial in *Westchester (New York) Medical Bulletin*, 13:12, 16-17, December, 1945.

"Total" Therapy

FOR INDUSTRIAL DERMATITIS

"The therapy of a majority of the cases of contact dermatitis encountered in industry", according to the noted dermatologist, Dr. Frank C. Combes[1], "requires no further medication than the intelligent use of a *good buffer solution such as Liquor Aluminum Acetate (Burow's solution)* . . . and a *good crude coal-tar paste.*"

His preference for wet dressings solution is **Domeboro Tabs** ("widely used in industry", particularly by Parkes[2] at Curtiss Wright for cutting-oil dermatitis)—because it is "a convenient tablet which, when dissolved in water, releases a *lead-free aluminum acetate in appropriate dilution,*" with a substantial percentage of boric acid.

The *crude coal-tar paste* used at New York University, according to Combes, "is manufactured commercially under the name **Daxalan**"—which has been found *superior to distillates, filtrates and pastes containing liquor picis carbonis.*

It must be properly applied for "optimum benefit", and Combes advises thinning with **Domelene** for spreading over a large area—because in his judgment its hydrophilic ointment base "does not materially lessen the therapeutic efficacy of the paste."

With tissue repair under way, and only erythema remaining, the use of **Domebore Ointment** (each ounce of which, in a special hydrophilic base, possesses the therapeutic action of one Domebore Tab diluted in a pint of water), permits a quicker return to work, while healing is promoted by its efficient topical action.

(1) Combes, F. C.: Indus. Med., July, 1944.
(2) Parkes, Morey: Indus. Med., January, 1944.

Samples and full details gladly sent on request

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250 EAST 43rd STREET • NEW YORK 17, N. Y.

Canadian Distributor: F. J. Whitlow & Co., Ltd., 165 Dufferin Street, Toronto, Ont., Canada
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The Safety Engineer's Job

LET US now examine the role of the safety engineer. His is a comparatively new job, beset by all the headaches and growing pains of any pioneer activity. Not the least of his problems result from the fact that management and labor as a whole have not yet been "sold" on the importance of safety engineering. The future of the job demands that this be done. As in every new occupation, safety engineering has attracted men totally unsuited for the work, who lack initiative, organizational ability, personality, and plain intestinal fortitude. It is not unusual to find that the job of a safety engineer has little more status than a plant job, and he has not made any effort to better his position because, as it is often expressed, "I never tried, since you just can't do it in this company." While this may be true in a few cases, there are a number of instances where better men have made their jobs important by producing results. Lack of proper planning is a common fault that results in wasted effort and lost prestige because no goal has been set, no program established, and no semblance of an organization attained. The usual excuse is that the safety engineer is too busy to plan. Generally he is too busy tacking up signs, picking up debris, or doing other menial tasks that should be left to others. Characteristically, he often wastes considerable time over some obscure accident cause, while the plant accident frequency and severity rates are rising, largely as a result of common and easily remedied causes. There is the "ostrich type" who, despite a high dollar loss to his company, can always show a good accident record on paper, arrived at by adjusting results or by estimating low lost-time factors for accidents. Actually, injuries in his plant are frequent and oftentimes serious. This individual inspires only resistance to the general safety effort and employee ill-will toward his company. There is also the fellow who will not make any effort to cooperate with medical, personnel, maintenance or other departments, but prefers to operate as a separate entity. Another type is the engineer who asks nothing and tells nothing and, when confronted with a problem for which he has no answer, considers it foolish to ask his fellow workers for help; when turned to for assistance, he hides his "knowledge" with a knowing smile. He is the one who makes little or no effort to keep abreast of changing techniques for controlling accidents. Too frequently the safety engineer does not perceive the relationship of his job to the whole production schedule, though the cost of accidents significantly affects production costs. He approaches management with loss curves in terms of frequency and severity rates only. While these serve a purpose, management can

AMERICAN OPTICAL COMPANY

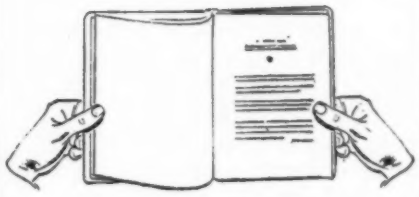
Announces

A PLAN for Industrial Safety and Visual Efficiency, developed in co-operation with the Ophthalmic Professions, which makes it possible for the eyes of each worker to meet the visual demands of his job; resulting in increased individual output . . . better quality of work . . . a noticeable reduction of accidents and spoilage . . . and lower production costs.

The AO Plan

Visual status of each employee checked by AO Sight-Screener operated under the supervision of a member of the Ophthalmic Profession.

Interpretation of the screening record cards by the professional man in charge. Recommendations given for complete examination and clinical diagnosis when indicated.



Plant survey to determine the location and nature of eye hazards. Report contains recommendations of proper eye protection equipment and visual efficiency program to meet plant conditions.

EVERY STEP in business from the entering of the order to the writing of instructions, operation of machines or equipment, inspection, packing and shipping, is dependent on *vision* and visual skills.

For every kind of work, a minimum degree of vision ability is required.

Below that minimum the efficiency of the operation is impaired, resulting in slow production, mistakes, spoilage and accidental injury.

The AO Plan for Industrial Safety and Visual Efficiency has been developed to provide industry and members of the Ophthalmic Professions with the advisory services of a group of industrial consultants, the AO Sight-Screener, and service on corrective-protective materials and safety goggles. It also provides the necessary forms, manuals and records for putting the plan in operation.

Write today for "Industrial Visual Efficiency, A Management Opportunity." This brochure describes the plan, its installation and operation, and the benefits to be obtained.

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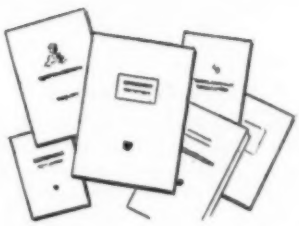
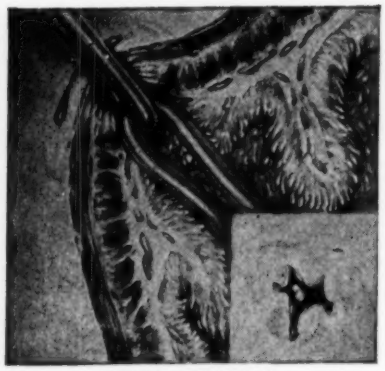
Complete service on safety goggles and corrective-protective equipment to meet every industrial requirement.



Assistance in the development of a program to educate employees on the value to them of eye protection and visual efficiency.

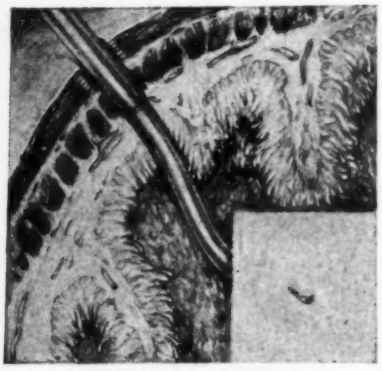
BENEFITS

Improved quality of work
Increased individual output
Reduced spoilage
Fewer accidents
Lowered cost per unit
Elimination of eyestrain, fewer mistakes



EYED NEEDLE

The eyed needle does greater injury to tissue because it pulls a looped suture in its wake.



ATRALOC NEEDLE

The Atraloc needle causes minimal injury. It pulls a single strand, slightly smaller than the needle.

ATRALOC NEEDLES

For minimal suture trauma–

Superior holding power

The name "Atraloc" designates our uniquely designed swaged needle, which is attached to the suture by our own exclusive process. The shank of the Atraloc needle is specially constructed to give maximum holding power on the suture. Extensive laboratory tests have proved that Atraloc needles hold on pulls in excess of U.S.P. tensile strength requirements for sutures pulled over a surgeon's knot.

The Ethicon line contains a wide selection of sutures with Atraloc needles, straight or curved, in all approved designs and sizes.

ETHICON Sutures

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often be sold a better "bill of goods" by showing the added production costs resulting from accident losses. Often the academic-minded safety engineer talks to workers in such technical language and attempts to illustrate his points with such complicated charts that his meanings are completely incomprehensible to the layman. In such cases, workers may well remark, "He's a smart fellow, all right. Wonder what the devil he was talking about?" Another shortcoming of the safety engineer is his frequent failure to draw on many available sources of help, such as engineering societies, safety organizations, and insurance companies, all of which are only too ready to supply advice and assistance. We should remember that the safety program is like any other organizational activity: It tends to run down, lose interest value, and stagnate if not revitalized with an occasional injection of new ideas.

—From American Management Association's *Personnel*, 22:3, pp. 194-5, November, 1945.

He Loves Osteopathy

I AM NOT what you would call a steady subscriber to the *American Osteopathic Association Journal*, because its racing selections are indifferent and I do not care about its advice to the lovelorn. However, I read a piece culled from it the other day which I think a great many husbands would do well to study. It provides a beautiful out. Says this publication: "Emotional upheavals and irrational quarreling between husbands and wives are often caused by damaged joints in the spinal column," or, in other words, "spinal tantrums." The *Journal* goes on to say that judges should not grant divorces to "incompatible" couples until both have had their spines checked —and I don't mean with the check girl. No wife should become resentful because her husband suddenly hauls off and pops her in the kisser; he may just have a vertebra on crooked. I tried to discuss this with the little woman after our morning workout in which time she chased me three times around the living room with the andirons (time, 1:24:3; track fast). "Hold off!" I cried, about the third lap, "you may be entirely wrong in calling me a gold-plated louse. How do you know it is not something wrong with my spine?" "There is nothing the matter with your spine, yet," snarled the little woman. "It is just your evil disposition—and you can write that in your lousy spinal column. But if I can catch up with you things will be different. I have picked out the exact three vertebrae I am going to fracture." Ouch! A little more liniment up there, nurse! The little woman is so scientific.

—GEORGE DIXON, in *Chicago Herald-American*, quoted in "Tonics and Sedatives," *J.A.M.A.*, November 24, 1945.

Flank Maneuver

LET US see to what extent the U.S.P.H.S. has been willing to dismantle its war-fed bureaucratic machine. At this date not one single reserve medical officer has been released under the so-called "point system," although practically all are pleading for their constitutional right to be free agents. The point system was so rigged that by March 1, 1946, approximately eight months after V-J Day, only a token, infinitesimal fraction of the total number of reserve officers would have been freed. A vague promise has been expressed that "an effort will be made to inactivate reserve commissions by September 1, 1946." There is no guarantee that even that condescending promise will be kept. Why is it that today, when the Army and Navy have already discharged almost half of its wartime personnel, the U.S.P.H.S. has not liberated one single medical officer on points? Is it because of transportation difficulties? No! Most of its men are in continental United States. Is it because these doctors are needed for treating service casualties? Again no! Most of them are doing civilian practice under federal auspices and many of them are doing next to nothing. . . . Is state medicine coming? I say, it is here! When an official in Washington can dictate to thousands of doctors of medicine where they must work, how much they must accept in pay, whom they must treat, and what treatment they must give, then you have medical dictatorship far worse than Wagner and Dingell ever dreamed of. If you fail to recognize it as such, it is

"The local care of the burn should start THE INSTANT the burn occurs . . ."

—Caulfield, P. A.: Therapy of Burns, Med. Annals of the District of Columbia, 13:251-253 (July) 1944.

FOILLE

applied as soon as possible to the burned surface quickly provides a measure of *relief from pain*—thereby aiding materially in mitigating the potentially serious element of shock.

Foille provides several "Plus Factors" in local burn management.

In actual practice, Foille is adapted to the same treatment methods—pressure dressings, for example—as apply to bland ointments, but in addition Foille is so chemically balanced in formula that it offers these desirable "plus" clinical advantages:

- ***Consistently avoids sepsis***
- ***Markedly controls pain***
- ***Stimulates quick granulation***

FOILLE EMULSION... 5 gallons, gallons, quarts, pints, 4-oz., 2-oz. bottles.

FOILLE OINTMENT... Stable, *all* vegetable oils base—6 lb., 1 lb. jars.

Write to us for sample of New Foille Ointment

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She CHOOSES a laxative . . . but ACQUIRES a habit . . . . . .

Every physician knows that one of the worst features of the laxative habit is the progressive failure of the original dose to act effectively. This leads inevitably to harsher purgation.

TAXOL breaks this vicious circle in several ways. First and foremost, TAXOL does not "fade" with time. On the contrary, TAXOL dosage has actually been *reduced* and the patient weaned away from purgatives.

Second, TAXOL employs only **one-tenth of the U.S.P. dose of aloes,** due to the emodin-releasing action of bile on aloes. In consequence, use of TAXOL is free from pelvic congestion and is feasible in menstruation, pregnancy or hemorrhoids.

Third, TAXOL stimulates normal secretions so that there is less need for any cathartic. It may even be used as an adjuvant in biliary anorexia.

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merely because it hasn't as yet caught up with you. To those of us trapped in this federal bureaucracy, state medicine is very real right now. If anyone is naive enough to believe that the U.S.P.H.S. is planning to disgorge its power and its hold over private medicine now that peace is here, let him study the budget requests of that organization for 1946. Let him compare it with the amount of money the service spent pre-war. And I am referring particularly to that item on the budget termed "state services." The term "state services" covers a multitude of sins; it also covers a number of broken, defeated physicians, and I believe it covers the medical future of all of us.

—From a Letter to the Editor in *Detroit Medical News*, January 7, 1946.

Hot-Water Resuscitation

LARGE-scale German experiments, organized and planned by Heinrich Himmler, Nazi Gestapo chief, and performed on prisoners in the Dachau concentration camp, together with experiments on animals, are reported by a U. S. investigator as proving that rapid and intensive rewarming of the body by means of hot water baths is superior to other methods of resuscitation from shock resulting from prolonged exposure to cold, according to the Office of the Publication Board, Department of Commerce. A survey of the German experimental work and information on the findings of the various German scientists involved in the research work are presented in Report No. 250, 228 pp., prepared by Major Leo Alexander, entitled "The Treatment of Shock from Prolonged Exposure to Cold, Especially in Water," distributed by OPB at $2.00 per copy. Resuscitation by rapid warming in hot water was first proposed in 1880 by the Russian scientific writer, Laptschinski. This method apparently was forgotten, and slow and gradual methods of gentle rewarming have come into general use. In Major Alexander's opinion, the German scientists have proved that the slow methods endanger life by allowing an excessive "afterdrop" of body temperature and do not sufficiently relieve the heart from the overload in the proximal districts of circulation. Dr. Alexander reports that the superiority of Laptschinski's method was discovered accidentally by German scientists, when it was found that guinea pigs, after having been chilled to ordinarily fatal levels, revived rapidly upon being placed in a hot water bath of about 40° C. Experiments on human beings were carried out primarily upon the initiative of Himmler, through his personal and scientific staff down to concentration camp personnel. The Luftwaffe cooperated by supplying apparatus and additional medical personnel. The experiments at Dachau are reported to have included placing prisoners in tubs of ice water, while their sufferings and death throes were recorded by sets of electrical instruments attached to their bodies. Experimental use of the rapid resuscitation method on humans proved so effective that in November, 1943, the Luftwaffe made it mandatory for personnel rescued from cold water to be subjected to rapid warming in water of 45° C for purposes of emergency resuscitation. The German Navy also instituted use of this method.

—Department of Commerce Release.

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—From "How's Your Health," in the *Red Triangle*, 13:8, 10-11, December, 1945, publication of Continental Oil Company, Ponca City, Oklahoma.

The Anxious

WITH the better understanding of physiology, the physiology of the autonomic nervous system in particular, many of the symptoms of which these people suffer have been explained. Rage, excitement and fear frequently produce a distinct hyperglycemia. For example, most football players will show sugar in the urine after an exciting game even though they never left the bench. Conversely, chronic anxiety will often result in a transient hyperinsulinism with all the symptoms of hypoglycemia. During periods of emotional upset, or undue fatigue, yawning and sighing are commonly seen. This results in a gradual reduction of the carbon dioxide content of the blood until the signs and symptoms of tetany appear from a relative alkalosis. Increased tension of the musculature may lead to aching joints, particularly in the region of the occiput. The band-like headaches, so common in these patients, are on the same basis, plus the added vascular constriction. Thus, with the exception of the hysterical phenomena, such as blindness and paralysis, nearly all the patients with chronic anxiety states have symptoms that are due to physiologic disorders. They suffer untold agonies and deserve our wholehearted sympathy and understanding. The great temptation in handling these patients is to treat them for a minor organic ailment and explain their troubles on this basis. Vitamins and hormone injections are used far too often and in the end only serve to undermine the confidence of the patient in the physician. Worst of all is to tell the patient nothing is wrong and that his troubles are imaginary. This not only destroys confidence in the physician but also the patient's own self-confidence. Almost any active treatment will give temporary relief. Frequently, a simple explanation of the nature of the symptoms will do a great deal for these patients, but it is only through careful ferreting out of the possible cause of the anxiety that a cure will be effected. If the cause is not found after a few visits it is best to call in a competent psychiatrist. Unfortunately, the average psychiatrist is too busy with the psychotics to direct his attention to the anxiety states. In addition, there are far too few psychiatrists to handle the supply of patients. Probably the supply of psychiatrists will never reach the demand and the internist must assume part of the load. With this in mind, it is well for the internist to acquaint himself with the physiology and therapy of chronic anxiety.

—Editorial by BERNARD P. WOLFF, M.D., in the *Journal of the Medical Association of Georgia*, December, 1945.

How to Do It

MANY county and state medical societies are already operating successful voluntary health insurance programs. The Michigan plan with 800,000 members, for example, has operated most successfully for the past three years. Cannot a national voluntary insurance plan be started at once, using these experiences as a background? A national voluntary insurance plan combined with an aggressive educational program has many advantages over the compulsory type, but we cannot wait years for such a program. We are in the position of the patient to whom a radical surgical operation has been recommended. He asks for consultation and the consulting physician disagrees with such radical procedure and recommends a broad research program in this particular disease. This is a sound scientific suggestion, but the patient may die in the meantime. If organized medicine feels that compulsory health insurance is not the answer to this admittedly pressing problem, organized medicine must supply the answer. By utilizing the experience of existing voluntary medical and hospitalization plans a satisfactory national voluntary program could be achieved.

—From "Medical Care," in *New York Times*, January 5, 1946.

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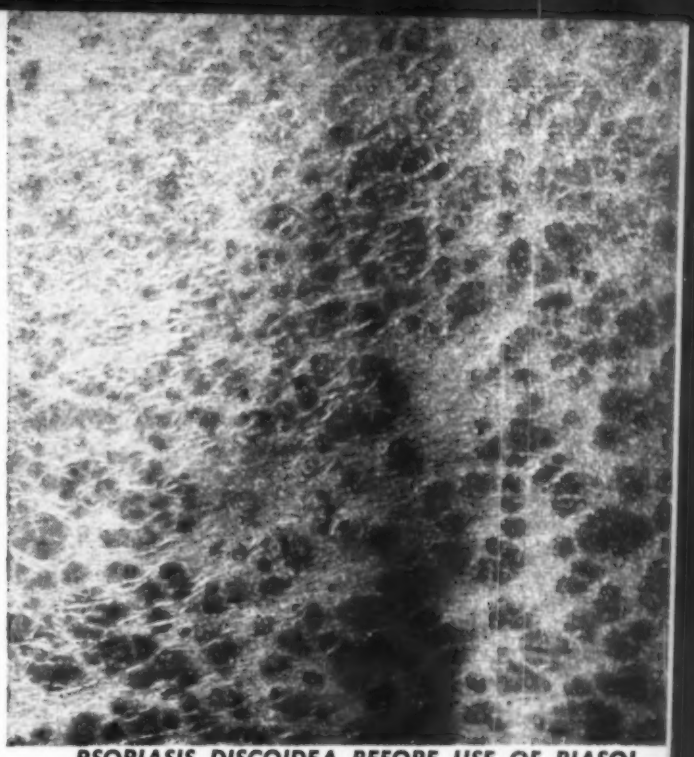

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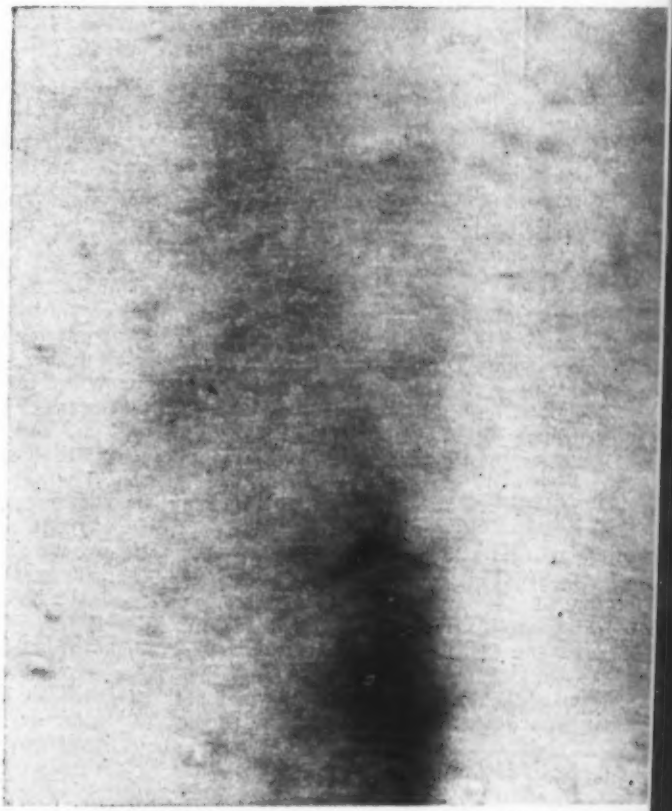

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CURRENT ARTICLES of QUALITY

Injury to the Colon

R. J. WHITE, M.D., Fort Worth, Texas, "Injury to the Colon from Air Hose Inflation," in *Texas State Journal of Medicine*, 41:8, 406-407, December, 1945. Extract: "I am sure that all who grew up in small towns recall one or more 'goosey' negro boys who unfailingly reacted picturesquely to appropriate stimuli to the perennial delight of appreciative audiences. In such a situation no harm was done and in the immortal words from 'The Mikado' a 'source of innocent merriment' was provided. But this is not always true. The hazards of compressed air hoses are apparently little understood by many men who handle them and this lack of knowledge together with the impulse to 'goose' a fellow workman has led to many tragedies. Swenson and Harkins in a review of the literature of injuries to the colon from compressed air published in the *American Journal of Surgery* in January, 1944, said that up to that date 65 cases of complete rupture of all the coats of the colon, and 10 cases of incomplete rupture had been reported. Compressed air was introduced into industry around 1900 and the first case report of injury to the bowel from it was made by Stone, in England in 1904. The first complete review of this type of injury was published by Andrews in 1911 with a case report of operation and recovery and a collection of 15 unpublished cases. Since then the most thorough discussion I have found was by Ide. Neece, Block and Wiessman, Brown and Dwinelle, Patterson, Burt and others have written about this condition and a very large proportion of all these injuries were the result of horseplay, though some were truly accidental. Most air hoses used in industry apparently carry a pressure of from 75 to 125 pounds per square inch. Many of the injuries occurred in railway employees and most of the remainder in factories. Ide could find only a hearsay account of one case in a filling station but I recall reading of one years ago but was unable to locate the original report. Probably the construction of the nozzle used in filling stations mainly for inflating tires accounts for its rarity there. Ide points out that compressed air is piped to various places in industrial plants and is used extensively in industry for transmitting power to drills, riveters, and other machinery, for cleaning debris from inaccessible places, paint spraying, sand blasting, and the like. Also most of the men who have written of this injury tell of the habit workmen have of dusting off each other's clothing with compressed air and several of the really accidental cases reported have happened when this was done by a fellow workman at the request of the victim, but the largest number have been the result of a practical joke and with very few exceptions the victims have been fully clothed."

Beryllium Poisoning

H. S. VAN ORDSTRAND, M.D.; ROBERT HUGHES, M.D., Cleveland; J. M. DE NARDI, M.D., Lorain, Ohio; and MORRIS G. CARMODY, M.D., Painesville, Ohio, "Beryllium Poisoning," published in *Journal of the American Medical Association*, 129:16, 1084-1090, December 15, 1945. Extract: "Beryllium poisoning is an industrial disease that demands attention because of the loss in manpower and the fatalities incident to increased production in the beryllium industry. During the past four years 170 cases of poisoning were seen among workers in three plants producing beryllium, its compounds and its alloys. Manifestations included dermatitis, chronic skin ulcer and inflammatory changes in the respiratory tract, skin and respiratory tract changes occurring concurrently or singly. The severest manifestation was diffuse pneumonitis. This caused the death of five patients."

Traumatic Disability

JOHN L. LINDQUIST, M.D., Department of Surgery, "Prevention of Disability in Traumatic Conditions of Extremities," published in *J. Indiana State M. A.*, 38:11, 451-454, November, 1945. Text: "In the surgery of trauma far more attention is usually given to the immediate treatment of injury or infection than to follow-up care, although the end result of treatment depends as much, if not more, on follow-up care as on the immediate treatment. This tendency is true not only in our teaching and textbooks and in the literature, but also in practice. The aim of treatment in the surgery of trauma is to restore the injured part as nearly as possible to its former anatomical condition, with the minimal loss of function. Anatomical restoration and healing entail inactivity, either through the employment of immobilization in treatment or because the pain and swelling associated with injury promote disuse. A certain degree of atrophy, contracture, or ankylosis necessarily ensues. Immobilization of a part, while essential for healing of an injury, is detrimental to its ultimate function. The most important aspect of rehabilitation is the prevention of unnecessary or excessive loss of function. In the present state of knowledge and with all modern facilities for physical therapy, it is still apparent that prevention of functional loss is a more fruitful field of endeavor than correction of existing disability. This has been emphasized by one of our outstanding physical therapists, DR. JOHN COULTER, who reiterates the plea to surgeons that 'physical therapy should begin at the bedside.' Physical therapists also recognize the fact that the disabilities they have to treat follow patterns which are more or less characteristic of the preceding injury. By studying these patterns surgeons can take measures to minimize the disability resulting from a given injury. The well-known dicta, 'splinting in the position of function' and 'early active motion' are only two of the means by which prevention of excessive disability can be achieved by surgeons treating trauma. It is my purpose to discuss some of the common problems encountered in our Rehabilitation Clinic at St. Luke's Hospital. Many of the patients under treatment there have been previously discharged from treatment elsewhere, with the existing disability considered as an end-result, or inevitable, and yet with careful and sometimes prolonged treatment much has been gained in restoration of function. Some patients are referred from places where adequate facilities for this type of treatment are not obtainable. Others have obstinate disabilities definitely inherent in the original injury or arising from failure to appreciate and apply fundamental principles of prevention. Still others have impairment of function in parts more or less remote from the original site of injury, where the development of disability has not been suspected. Only the ordinary problems of functional impairment encountered in the extremities, which can be minimized or prevented by the surgeon, are under consideration here. Impairment of Function in the Hand: The most important function of the hand is the grip or ability to close the tips of the fingers into the palm and appose the thumb tightly against the other fingers. While ankylosis, deformity, or loss of tendon substance sometimes cannot be prevented or remedied following severe hand injuries or infections, in most instances much can be done to minimize the contracture of periarticular tissues and the formation of adhesions about joints and tendons. The tendency toward contracture of joint capsules and periarticular tissues increases with age and with the development of arthritic changes in the small joints of the hand. Particular care should be given to the prevention of contracture about these joints, especially in older patients, and in those having arthritic changes. Too often a patient who sustains an injury to only one or two fingers acquires contracture and fixation, not only of the injured digits, but of the uninjured fingers as well, because of immobilization or disuse of the entire hand. To prevent this unfortunate result, all unnecessary immobilization must be eliminated and disuse guarded against. Essential immobilization must be employed, but only in the position of function. During the period of treatment of the acute injury, when the injured finger must be kept at rest, measures should be taken to maintain function in the adjoining fingers. At the time dressings are done the parts

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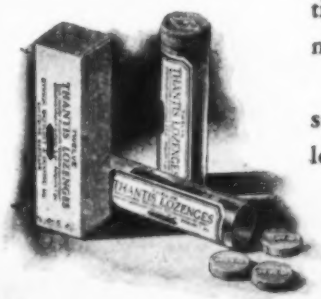

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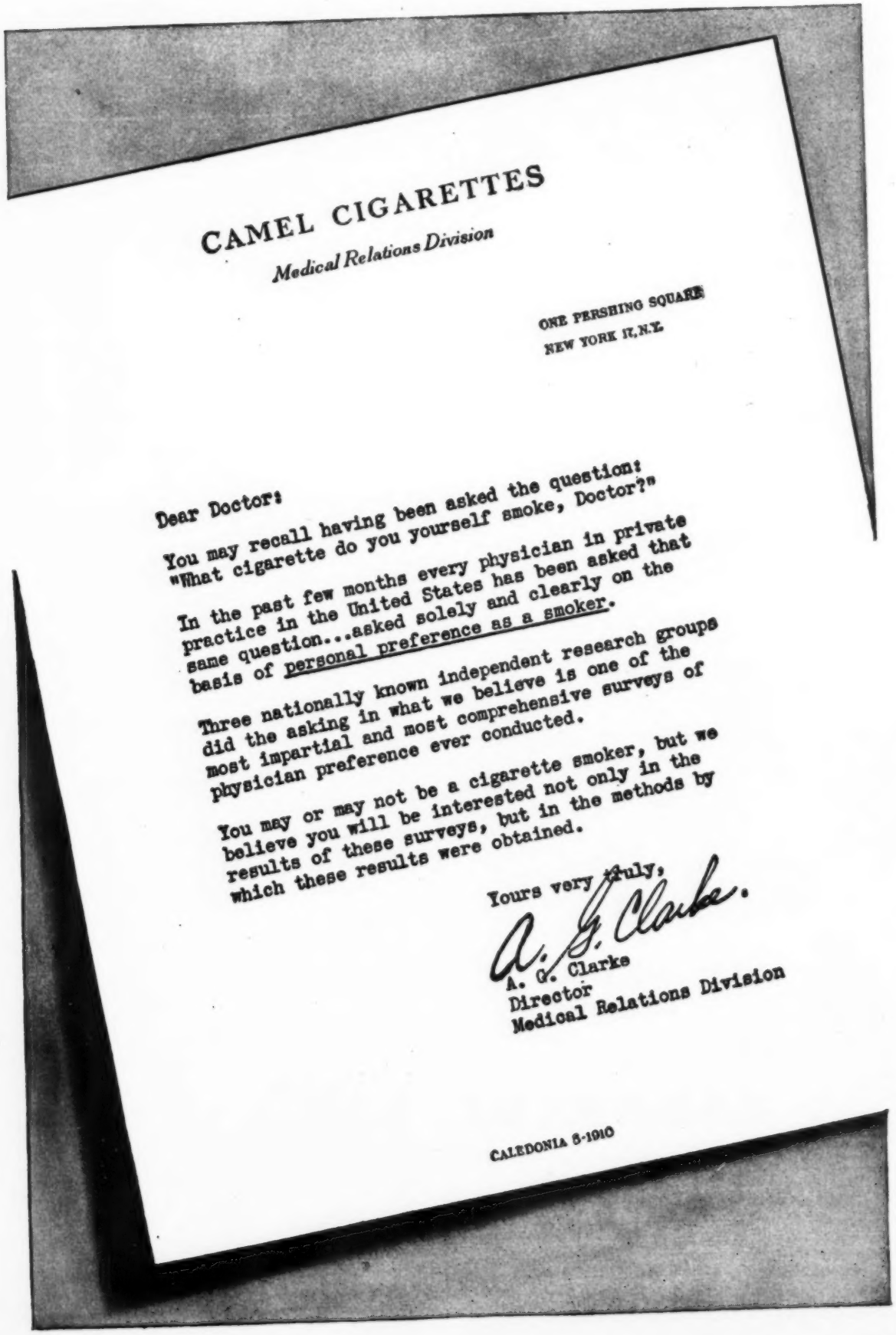

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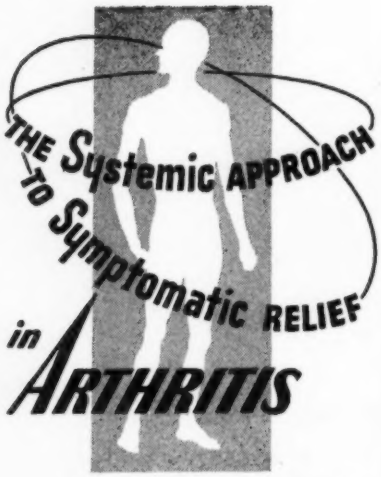

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that can be moved with safety should be moved actively or passively, and the patient should be instructed to carry out these motions several times daily. Attention must be given to the maintenance of motion at each of the digital joints, since all are concerned in grip. Passive, and particularly active motion, should be started on an injured part as early and as far as possible without jeopardizing healing. Too much reliance is placed upon the application of heat to an injured part for the prevention or treatment of impaired function, and the use of diathermy or the infra-red lamp is often considered to be the most important aspect of rehabilitation therapy. These modalities are of secondary value to the intelligent employment of motion. Normal flexion at a joint depends upon the existence of plications or slack at the extensor aspect of the joint capsule and periarticular tissue in the position of extension, and normal extension depends similarly on folds at the opposite aspect of the joint. Inflammation about joints produces exudates, which organize to form adhesions between these plications while the joints are immobile. Fibrous adhesions binding together the plicae or minute folds in the periarticular tissues prevent the separation and flattening out of the folds, and thereby limit motion at the involved joints. The application of heat helps to allay inflamamtion and the formation of exudate, and aids in the absorption of exudate, but motion is essential to prevent the formation of rigid adhesions. Once adhesions have formed, the efforts of the physical therapist must be directed toward the gradual stretching out of the adhesions, a process which usually requires months of intensive treatment, and the outcome of which depends upon the duration and density of the adhesions. Prevention of the formation of rigid adhesions makes the task of the physical therapist easier and more productive, and reduces both the amount and duration of disability in the part involved. The primary aim of treatment of the injured hand should be to restore or maintain the ability to grip the fingertips against the palm, and the thumb against the fingers. Impairment of Function at the Elbow: The tendency of serious impairment of function to occur following relatively minor injuries is perhaps nowhere more apparent than at the elbow joint. Contracture, ankylosis, and myositis ossificans are notoriously prone to develop at the elbow after trauma. The immediate treatment of injuries about the elbow joint is chiefly concerned with anatomical restoration or the prevention of infection, and is not under consideration here. Following anatomical restoration and immobilization, the important feature of treatment is prevention of limitation of motion. Early mobilization of the elbow joint has frequently been stressed, and the principle of minimal immobilization of this joint is familiar. The detrimental effects of passive stretching and forcible manipulation, however, are often disregarded. It is widely recognized that forcible manipulation usually produces a decrease rather than an increase in the range of motion at the elbow joint following trauma, but confusion exists with respect to the difference between forcible manipulation and passive stretching, on the one hand, and active motion against resistance on the other. The most beneficial form of motion for the recovery of function at the elbow is active motion against increasing, graded resistance. Technicians and nurses to whom physical therapy is usually delegated often use force in the treatment of elbow limitation unless they are definitely instructed to avoid it. A device commonly used to regain extension at the elbow is the method of having the patient carry a pail filled with increasing weights of water or sand. This is widely considered to be active motion against resistance; whereas it is, in effect, passive stretching. Active motion implies the use of extensor muscles, actively, to produce extension, and of flexor muscles to produce flexion. In other words, the patient should be given exercises that employ his own muscles in providing the force against resistance. When a patient carries a weight to increase extension at the elbow, the extensor muscles are not active, but instead the flexors immediately go into protective spasm to oppose the force. Active extension exercises for the elbow should consist of the pushing against a resistance by the extensor muscles, and active flexion exercises should consist of the pulling up of weights by the flexors. Active motion carried

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out in this manner is not likely to be forcible enough to do harm and at the same time it will increase the strength of the muscles by use in overcoming resistance at the joint. The use of any form of passive stretching at the elbow is fraught with danger and is to be condemned. Impairment of Function at the Shoulder: The most common disability occurring at the shoulder joint is the loss of complete abduction. Although other movements at this joint may also be partially impaired following disuse, limitation of abduction constitutes the greatest handicap to the patient. Loss of abduction at the shoulder follows not only injuries in the vicinity of the joint itself, but also injuries and infections of the fingers or hand where the hand and arm are weighted down with heavy spints or wet dressings in the position of adduction. Periarthritic conditions at the shoulder, such as subdeltoid and subacromial bursitis are very prone to develop spontaneously in adults, but are particularly common after a period of disuse of the arm. Abduction becomes painful and is avoided by the patient. This leads to fixation at the joint, atrophy of the abductor muscles, and contracture of the adductors. The triad of fixation, abductor atrophy, and adductor shortening causing limitation of abduction is extremely difficult to correct by exercises, because active abduction must be carried out against a double opposing force, namely, the force of gravity on the arm plus the disadvantage of action on the abducted arm, which acts as a lever. In most instances of trauma to the upper extremity the triad is avoidable, and the development of fixation represents a poor result in the treatment of the original trauma. Limitation of abduction at the shoulder requires a protracted period of strenuous and painful treatment for its correction, and often cannot be fully overcome. The development of rigidity at the shoulder can easily be avoided by attention to the shoulder joint in the treatment of all traumas to the upper extremity. The arm may either be immobilized in the position of abduction, or, if immobilization is not necessary, the patient should be instructed not to keep the arm against the side of the body. If the patient is confined to bed, the arm is kept away from the side with pillows or an abduction splint. The ambulatory patient is instructed to let the arm rest in an abducted position on the arm of a chair or on a table when he sits. While passive stretching at the elbow is to be condemned, it at times can be applied to the rigid shoulder with benefit, as an adjunct to the use of heat, massage, and active motion. In some cases of marked rigidity at the shoulder, passive stretching or manipulation under anesthesia is essential to recovery of abduction. Impairment of Function in the Foot and Ankle: In contrast to the primary function of performance of movements in the upper extremity, the functions of weight-bearing and locomotion are of more importance in the lower extremity than a full range of joint motion. While a full range of motion at all joints is desirable, a patient can compensate for a certain amount of loss of movement at a joint in the lower limb if the position of the part is such that the weight-bearing function is not impaired. An unfortunate result not uncommonly encountered following trauma to the lower extremity is the rigid, plantar-flexed great toe, the so-called 'hallux rigidus.' In some instances of hallux rigidus amputation of the great toe has been necessary to restore painless weight-bearing on the foot. This complication of trauma is inexcusable and can be avoided by measures to prevent the weight of the bedclothes from resting on the toes. The great toe should always be splinted in its position of function, in the plane of the sole of the foot, and leg casts should extend beyond the distal end of the toe to hold the toe in this plane. Rigid, plantar flexion of the ankle joint is a similar but more serious disability, and is encountered more frequently. This condition prevents the patient from getting the heel down on the floor in walking. It is extremely difficult to overcome long-standing plantar flexion of the foot and ankle. In the application of casts to the leg and ankle, the surgeon should maintain the position of the foot at 90° with reference to the frontal plane of the leg. A small range of motion at the ankle will then provide not only good weight-bearing, but also fair locomotion. Displacement of the weight-bearing line at the ankle in the sagittal plane not infrequently follows the treatment of various types of Pott's fracture. This extremely disabling complication results from unrecognized rupture of the distal tibio-fibular ligaments and interosseous membrane, with widening of the ankle mortise, and displacement of the astragalus, laterally. The ankle

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assumes a valgus deformity on weight-bearing, followed by persistent pain and swelling. A varus position at the ankle following immobilization can easily be corrected and is not disabling, whereas a valgus position means disability. Widening of the ankle mortise and astragalar displacement should be ruled out in every fracture near the ankle joint and corrected at the time of reduction, if present. Pott's original criteria for successful treatment, that the weight-bearing axis and the ankle mortise be restored, are still sound. Impairment of Function Following Knee Injury: A surprising number of patients who develop quadriceps atrophy with resulting weakness and instability of the knee joint after minor traumas are advised that they have a torn internal semi-lunar cartilage, or other internal derangement of the knee. A striking degree of quadriceps atrophy can occur in a few weeks after relatively minor knee injury. The primary cause of the atrophy is disuse, and as the patient favors the injured member and avoids quadriceps activity in walking, the muscle becomes progressively flabbier and weakened, and the knee more unstable. The instability of the knee then gives rise to repeated trauma, and a vicious circle is set up. The same factors are often responsible for poor results following surgery for internal derangements of the knee, and for the prolonged and recurrent attacks of synovitis and arthritis that occur at the joint. Prolonged immobilization of an injured knee is to be avoided, and exercises for the quadriceps muscle should be prescribed routinely and as early as possible. We have treated a large number of patients, who have been advised to undergo operation on the knee joint, simply by the use of heat, massage, and quadriceps exercises, with gradual and complete recovery. Operation on the knee in such cases, with its resulting period of disuse, aggravates the quadriceps weakness and makes the condition worse. When quadriceps atrophy occurs, not only is weight-bearing at the knee faulty and attended with further trauma, but normal locomotion is impaired. The principles herein briefly discussed are applicable in the treatment of many other traumatic conditions. If prevention rather than correction of disability is to be achieved in the surgery of trauma, the surgeon must make rehabilitation and physical therapy his immediate concern in treatment, instead of postponing restoration of function to a later period."

Manufacturers Health Clinic

L. M. PETRIE, M.D., Director, Industrial Hygiene Service, Division Preventable Diseases, "Manufacturers' Health Clinic, Winder, Georgia," in the *Journal of the Medical Association of Georgia*, December, 1945. Text: "To bring modern health practices to small industry is a major problem of industrial health today. Large concerns find it comparatively easy to establish and maintain a well-rounded program with full-time physicians, nurses, and technical personnel and equipment. But the costs of such a program and the pressures of the other interests of the physician in private practice introduce many difficulties which management in the small plant frequently finds almost insurmountable. That industry in Georgia is becoming more conscious of the mutual benefit to be gained through cooperative health programs is evidenced by the organization in Winder, Georgia, of a Manufacturers' Health Clinic. Participating in this program, in coordination with the Barrow County Health Department, and the Industrial Hygiene Division of the State Health Department, are six of the town's manufacturing establishments, the largest of which employs approximately 550 workers, and the smallest, 50. Totalled, the number of employees served through the plan is 1500. The idea of the clinic, the first of its kind in the state, was conceived in October, 1942, by the late Dr. W. L. Mathews, then serving as Barrow County Health Officer. It was to be a program which would embrace both human and economic values. With the help of the County Public Health Nurse, Dr. Mathews arranged a meeting which would organize and

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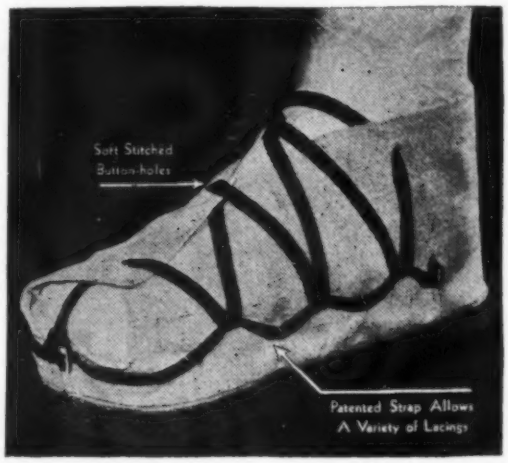

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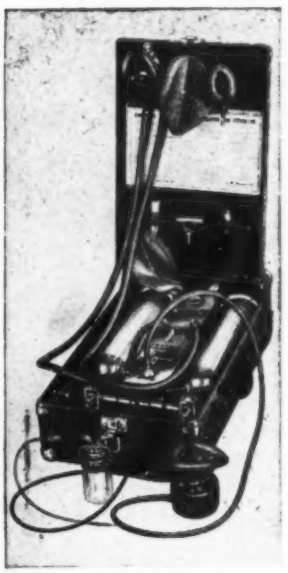

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promote industrial health work. In attendance were representatives from the State Health Department, the county boards of health and education, and executives from the local industries, which group later established a board of directors who, in turn, elected officers. The six member plants were to finance the clinic cooperatively, each contributing in proportion to its number of employees. An industrial nurse was employed, and a portion of the fourth floor of the local bank building, converted into equipped clinic rooms, became the hub of the program. On May 20, 1943, the clinic was actually opened. Originally, routine preplacement and periodic physical examination by the physician of all employees was planned. The physician was to acquaint himself, by periodic plant inspections, with job requirements and hazards in all the plants. Unfortunately, Dr. Mathew's ensuing disability and the acute shortage of physicians in the community rendered this impossible. In its stead, as a temporary measure, a routine physical inspection by the clinic nurse was decided upon. This inspection includes visual and hearing tests, blood tests for syphilis, and notations of height, weight, pulse rate, urinalysis, and obvious deformities. Such examinations are performed under written standing orders, signed by local physicians. Any abnormality found is referred to the physician of the employee's choice.

Framework of the nursing program is incorporated in the following seven points: (1) Quarterly meetings of nurse with the Board of Directors for report of activities, and discussion of immediate problems and plans for future development. (2) Establishment of routine program whereby health inspections, conferences and redressings are conducted at a specified time of day; this leaving some free time to nurse for tours of the industry, communicative contacts and the like. (3) Training, organization and supervision of first-aid workers. Daily visit to each first-aid station by the nurse. (4) Routine inspection to be made in the industry at stated intervals for the purpose of observing unsafe practices, general housekeeping and hazards, maintenance of rest rooms, etc. (5) Establishment of the cross-index card system for the purpose of adequate follow-up with the workers for correction of remediable defects, redressings and retreatments and individual conferences. A function of the records is to provide a tool for health education with the worker where indicated. (6) Use of County and State Health Department services. For example, maternity classes and well-baby clinics of the County Health Department or the periodic chest x-ray survey of all employees by the State Health Department, with all suspected cases of tuberculosis or other disease followed up by the clinic nurse in cooperation with the Health Department. (7) Plan home visiting by nurse for purpose of contacting individuals with specific needs, and for the purpose of health education of employee and family. Each year one-hour classes in first-aid instruction are held twice weekly for two months. Each worker completing this course is awarded a highly prized certificate and is placed in charge of a designated number of employees in his factory, and all first-aiders take weekly turns in assisting the nurse during her daily visits to the first-aid stations. Following the initiation of this effort, the plant owners became interested in the possibilities of such a service and all now have trained first-aid workers. Four of the factories operate well-equipped first-aid rooms, the average size of which is eight by twelve feet. In each are walls painted white, lavatory, first-aid wall cabinets, treatment tables, cots, stretchers, the necessary number of chairs, paper towels, cups, waste paper baskets, and floor linoleum. The remaining two plants have first-aid kits. The Industrial Hygiene Service has assisted in promoting the project, in the survey of the environment of each plant from a sanitary and health standpoint, in the development of records, in the outlining of the nurse's duties, and in the arrangements for chest x-ray examinations, on a survey basis, of all employees. The 35 mm. photofluorographic portable unit of the Tuberculosis Control Division

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*Kovacs, R.: Electrotherapy and Light Therapy, 1942, p.153.

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of the State Department of Health is utilized in these surveys, the first of which was conducted in September 1943. Benefits from the Manufacturers' Clinic have been equally great for both owner and employee; greater production at less cost on the one hand and less suffering and improved morale on the other."

Vitamin Supplementation

VITAMIN Supplementation for Industrial Workers," in *Nutrition Reviews*, 3:10, 297-298, October, 1945. Text: "The dietary findings, the prevalence of certain physical signs, and the results of laboratory measures of nutritional status among a group of aircraft workers in southern California have been reported previously (Wiehl, *Milbank Memorial Fund Quart.* 20, *329* (*1942*); Borsook, Alpert, and Keighley, *Ibid.* 21, *115* (*1943*); *see Nutrition Reviews* 1, *238* (*1943*); 2, *107* (*1944*). A third report in this series has now appeared (Borsook, *Milbank Memorial Fund Quart.* 23, *113* (*1445*)) which gives analyses of absenteeism, turnover, and personnel ratings on three groups of the workers as follows: (1) a supplemented group which received five administrations per week of tablets and capsules containing 50,000 I.U. of vitamin A, 800 I.U. of vitamin D, 10 mg. of thiamine, 10 mg. of riboflavin, 100 mg. of nicotinamide, 250 mg. of ascorbic acid, and 500 mg. of calcium (as the carbonate); (2) a placebo group which received tablets and capsules of corn oil and bicarbonate of soda; and (3) a control group which received no medication. For purposes of evaluation the 528 men who remained in the study for nine months or longer were subdivided into supplemented and placebo groups, and further into subgroups according to the changes in working shift during the study. Before reviewing the results of this study it is important to note that the experimental group (supplemented and placebo) volunteered for the study, while the "controls," although matched in characteristics so far as possible, were simply records taken from the general company file at the end of the experiment. The records on absenteeism were tabulated according to cause. There were no significant differences in absenteeism from any cause during the first six months of supplementation. During the second period of study, however, with the exception of one group, the 'unauthorized' and 'authorized' absence rates of the supplemented group were statistically significantly lower (i. e. such that the chances were five or less in one hundred that the observed differences could arise by chance) than the corresponding placebo class. In terms of total number of days absent per one hundred man days the figures were as follows: control 5.338, placebo 3.973, and supplemented 3.662. In contrast to the small difference between the placebo and supplemented groups, the considerably greater absentee rate of the controls is striking. It is evident that the factors of self-selection and participation in the experimental group exerted a marked effect, and one is led to question whether undetermined related factors might not have been responsible for the relatively small difference between the placebo and supplemented groups. Such factors are also implicated in the absence rate from illness during the first (March to August) and second (September to February) six months: control, 2.393 and 2.987; placebo 1.916 and 1.887; vitamin supplemented 2.135 and 1.920. These data do not appear to warrant the generalization that 'in the placebo group there was the usual fall and winter increase in absenteeism; in the vitamin group the seasonal influence was counteracted.' Similar small differences were noted in a lower turnover rate for the supplemented group, these approaching statistical significance after the fifth month. The differences were explained as due to a better attitude of the supplemented men toward the job, 'i. e. their morale became better.' The inference that vitamin supplementation increases morale is dangerous, and one difficult to substantiate by measurements of turnover rate. No doubt the factor of participation and the psychotherapeutic effect of any supplementation would also have had a considerable effect on turnover rate,

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but since the 'controls' were chosen only at the end of the study, they of course had no turnover rate. The company's merit review rating on each employee served as the index of industrial morale. This rating was made at six month intervals and attached a numerical score to each of six characteristics: production quality, production quantity, adaptability, knowledge of the job, dependability, and attitude. The investigators point out that the higher scores for all three groups in the 'final' merit review may be partly explained by the increasing usefulness of an employee with length of service as well as the tendency to make the ratings justify the increased salaries necessary in order to keep the men during the period of rapid expansion. Again there was a slightly larger final review score in the supplemented group, for example, the mean scores for the class which contained the controls were: controls, 6.312; placebo, 6.315; vitamin, 6.527. It seems questionable whether the results reported, without independent confirmation, could be accepted by the conservative nutrition worker as a basis for advising general dietary supplementation. The many factors which may affect absenteeism, turnover, general morale, and working efficiency demand the most careful consideration before differences of the magnitude reported can be completely accepted. Unforeseen circumstances such as a majority of one group working under a well-liked or greatly interested foreman might influence the results. Although the differences may be statistically significant, their interpretation still rests on the assumption that bias in sampling has been eliminated. The common device of reversing the supplemented and placebo groups in order to eliminate the effect of possible sampling errors was not employed in this study. Finally, if a real difference exists between the average performances of the groups, this cannot be interpreted that all of the subjects in the group were benefited by the additional intake of essential food factors."

The Neuroses

THOMAS A. C. RENNIE, Attending Psychiatrist, New York Hospital; Associate Professor of Psychiatry, Cornell University Medical College; Director, Division on Rehabilitation, National Committee for Mental Hygiene, "What Can the Practitioner Do in Treating the Neuroses?" in *Bulletin of the New York Academy of Medicine*, 22:1, 23-37, January, 1946. Extract: "To every physician of experience certain common and frequent problems of an emotional nature present themselves daily in his practice. Common sense has taught him to recognize the psychotic or grossly mentally disturbed individual. He knows that delirious reactions can occur from fever, over-medication, alcohol. He has seen patients in postoperative states of excitement. He can easily recognize the seriously depressed individual with his suicidal preoccupations. With these problems he is relatively little concerned since they are obvious and usually require the psychiatrist's attention. More commonly, however, he will encounter the patient with well-defined organic illness who reacts with strong emotion to it resulting in delayed convalescence, protracted symptoms and failure to respond to the usual medical regime. Secondly he will encounter those individuals whose disease picture represents a combination of physical and emotional problems (such conditions as peptic ulcer, colitis, hypertension, asthma, etc.) where he needs to know that the patient's emotional state may be the fundamental cause, may aggravate, may explain fluctuations, or may indeed determine the entire course of the disorder. This group of patients fall under the heading of that much misused term 'psychosomatic illness'—that area of medicine in which the patient's illness is most effectively treated by the joint cooperation of internist and psychiatrist. There is growing evidence to believe that many of these states begin first with emotional unrest and that protracted states of emotional upsets may ultimately lead to permanent and irreversible organic changes. Thirdly he will recognize that group of patients whose genuine physical complaints are primarily expressive of emotional disorders. These are the fatigue states and the insistent bodily or somatic complaints which the ordinary techniques of medical examination are inadequate to explain. Fourthly, there will be those patients whose complaints are predominantly psychological in nature. These individuals put to the foreground their symptomatology of anxiety, fear, obsessive thoughts and compulsive ac-

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**Ant, M., N. Y. State Jour. Med., Sept. 1, 1945.*

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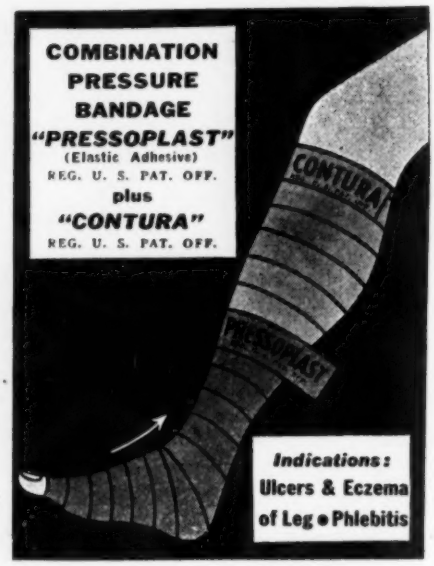

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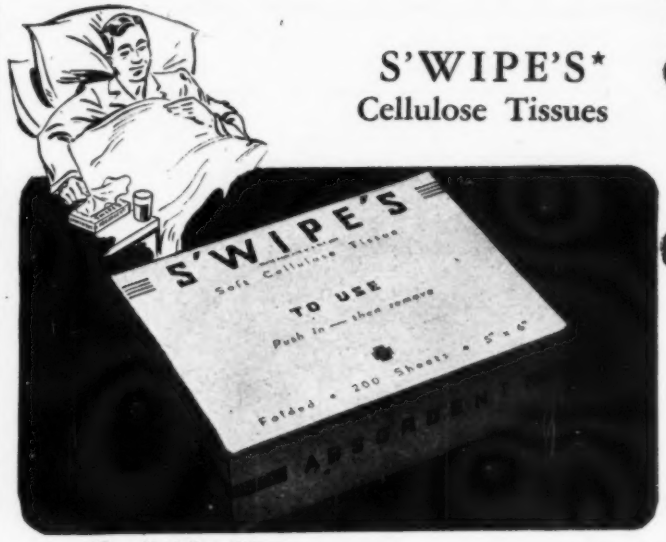

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tions. Some of all of these groups of patients may have spontaneously recognized the role of their emotional disturbances in the cause or particularly in the fluctuation of their symptoms. They will have partial insight. The practitioner may be as yet little acquainted with the fifth group of patients, those who present the interesting phenomenon of repeated accidents whom we have come to recognize as representing a special kind of personality make-up. The industrial physician recognizes this group, for he knows that the majority of accidents occur repeatedly among a small group of workers. The surgeon, the gynecologist, the genito-urinary and other specialists will recognize their particular problems of individuals who do not respond to repeated manipulations, who get persistently worse because of them, who may be rendered chronically disabled unless techniques other than physical manipulation are employed. There are patients who seek and crave operations, others who seem almost addicted to genital, pelvic and cystoscopic procedures. Finally, every physician must learn to recognize the depressed patient with his characteristic sadness, insomnia, weight loss, gloomy outlook on life, and his potential risk of suicide. The practitioner can learn to treat depressions, anxiety states, fatigue reactions, hypochondriacal illnesses, and psychosomatic disorders. He is not equipped to treat more involved neurotic reactions. What other than recognition, can the practitioner do about these disorders? First he must become convinced that these states are never conscious or feigned or deliberate, that they are beyond the average patient's capacity to resolve, that the true causes are largely unconscious or unknown to the patient and that they are always indicative of emotional conflict within the person. The simplest analogy is that which happens with anxiety. We are all familiar with normal anxiety responses, because we have all experienced it: the dry throat, the trembling hands, the tightening of the chest, the nausea, the diarrhea, the polyuria. The entire organism is involved in anxiety responses, and we have learned to study the cardiovascular changes, the increased leukocyte count, the metabolic and chemical imbalance accompanying anxiety. States of anxiety instead of being transient may become protracted, chronic, sweepingly disabling, and may arise whenever external stress or threat is present or whenever the threat derives from unrecognized conflicts within. Anxiety can be considered to be a natural defense mechanism of the human being which is called into play whenever the person is threatened. Many of the phenomena of psychiatry can be understood as to the person's attempt to handle this anxiety. The patient may experience it directly with all its attendant physical discomforts. He may attempt to protect himself from its pain by the development of physical complaints. He may deny it and escape from it in the substitution of hysterical symptoms with its characteristic emotional indifference to the symptom. He may project it upon others as blaming and suspicion; or he may rationalize it to himself by all kinds of thinly disguised and false explanations. None of these mechanisms is deliberate; anxiety in essence then represents the attempt of the sick individual to achieve some kind of balance within himself. The degree of anxiety he can tolerate or the point at which any human being reaches his dilemma of sickness depends in part upon his constitutional stability and capacity to bear stress, by the severity of the noxious stimuli or events of his life, or by the degree and stress of his internal conflicts. It is important for the practitioner to recognize also that the organism can be similarly thrown off balance by other emotions such as anger, rage, resentment, fear, jealousy, and suspicion. The practitioner will be little effective, therefore, until he learns to recognize and deal with the vast range of emotional responses of which people are capable."

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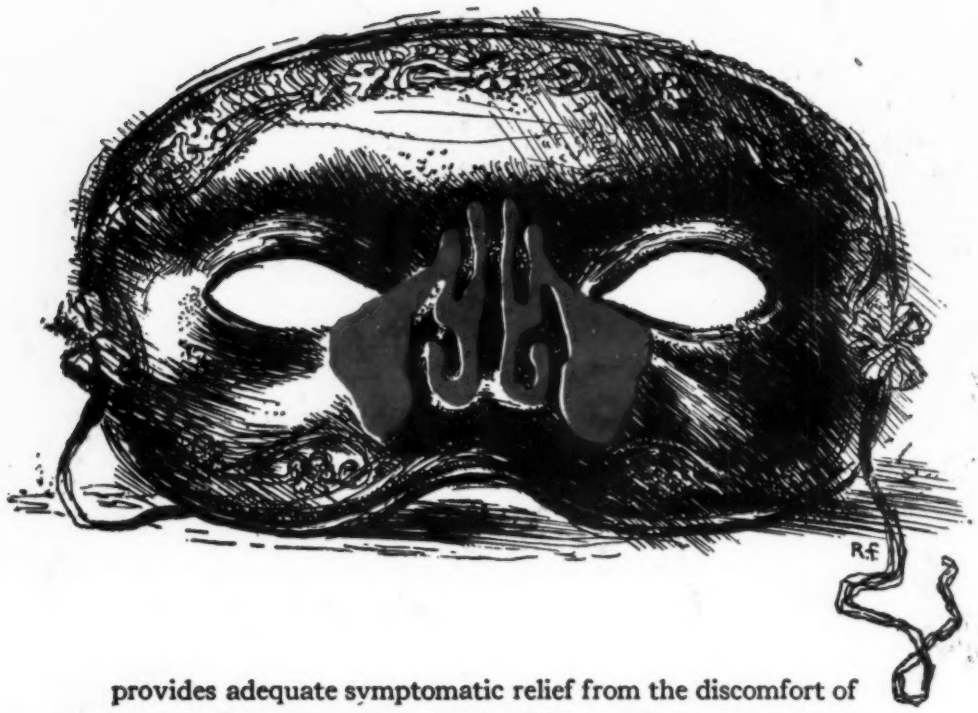

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